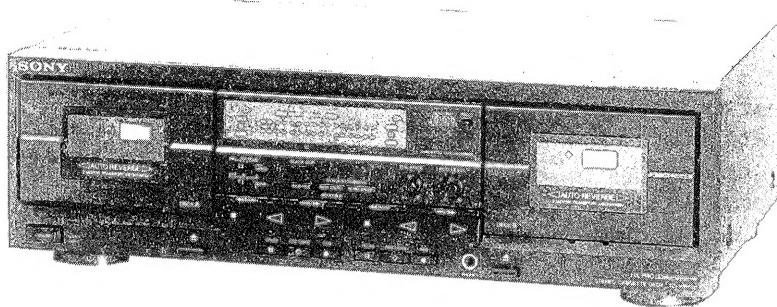


TC-WR670

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model



Model Name Using Similar Mechanism	TC-WR620
Tape Transport Mechanism Type	deckA, B: TCM-190RB12C

SPECIFICATIONS

Recording system 4-track 2-channel stereo
Fast winding time Approx. 90 sec. (with Sony C-60 cassette)
Bias AC bias
Signal-to-noise ratio (at peak level)

Dolby NR switch Cassette	OFF	B-Type ON	C-Type ON
Type IV (Sony METAL-SLT)	58 dB	66 dB	73 dB
Type II (Sony UX-S)	57 dB	65 dB	72 dB
Type I (Sony HF-S)	55 dB	63 dB	70 dB

Total harmonic distortion 1.0% (with Sony METAL-SLT cassettes)
Frequency response (DOLBY NR OFF)

Type IV cassette (Sony METAL-SLT)	30 - 15,000 Hz (± 3 dB, IEC) 30 - 13,000 Hz [± 3 dB 0VU(-4 dB)recording]
Type II cassette (Sony UX-S)	30 - 15,000 Hz (± 3 dB, IEC)
Type I cassette (Sony HF-S)	30 - 14,000 Hz (± 3 dB, IEC)

Wow and flutter $\pm 0.13\%$ W.Peak (IEC)
 0.07% WRMS (NAB)
 $\pm 0.18\%$ W.Peak (DIN)

Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV
	Input impedance	47 k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.32 V at a load impedance of 47 k ohms
	Load impedance	Over 10 k ohms
Headphones (stereo phone jack)	Output level	0.3 mW at a load impedance of 32 ohms

General

Power requirements

US, Canadian model: 120V AC, 60Hz 29W
AEP, Germany model: 220-230V AC, 50/60Hz
UK model: 240V AC, 50/60Hz
E model: 120, 220, 240V AC, 50/60Hz 29W

Power consumption

29 W

Dimensions

Approx. 430 × 135 × 300 mm (w/h/d)
(17 × 5 5/8 × 11 7/8 inches)

Weight

including projecting parts and controls
Approx. 4.7 kg (10 lbs 6 oz)

Supplied accessory

Audio connecting cords (2)

Design and specifications subject to change without notice.

Dolby noise reduction manufactured under license from
Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol  are trademarks of
Dolby Laboratories Licensing Corporation.



STEREO CASSETTE DECK
SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

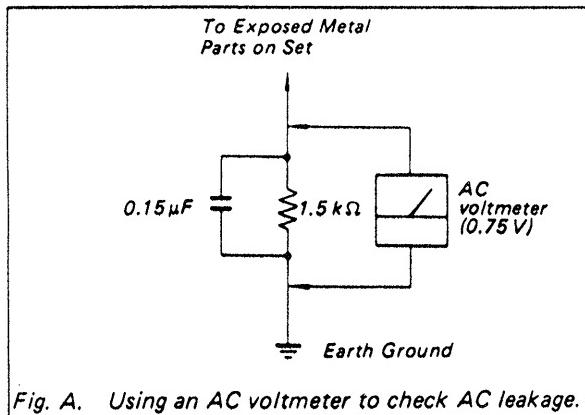


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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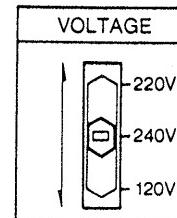
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Operating voltage (E model)

Operate the unit on either 120, 220 or 240 V AC, 50/60 Hz. Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage.

The voltage selector is located on the rear panel. If the selector must be reset, disconnect the AC power cord and set the selector to the appropriate voltage.

VOLTAGE Selector



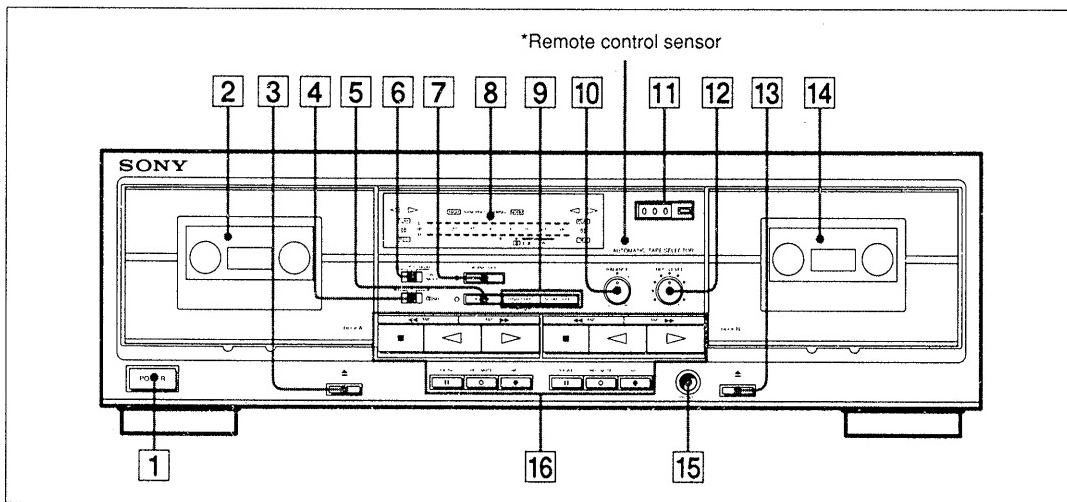
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1

GENERAL

This section is extracted
from instruction manual.



For details, refer to the page number indicated in ●

- | | |
|--|---|
| [1] POWER switch | [14] Deck B |
| [2] Deck A | [15] PHONES (headphones) jack (stereo phone jack) |
| [3] ▲ (eject) button (deck A) | [16] Tape operation buttons |
| [4] NR (Dolby noise reduction) switch [7] [11] [14] [16] | <ul style="list-style-type: none"> ■ (stop) button ◀ (leftward fast winding)(AMS**) button ◀ (reverse play) button ▶ (forward play) button ▶ (rightward fast winding)(AMS**) button II PAUSE button O REC MUTE (record muting) button [16] ● REC (recording) button |
| [5] A+B REC (simultaneous recording) button and indicator [11] | |
| [6] DIR (direction) MODE switch [7] [8] [11] [14] [15] [16] | |
| [7] BLANK SKIP button and indicator [7] [8] [10] | |
| [8] Display panel | |
| [9] SYNCHRO DUBBING buttons [10] | |
| HIGH SPEED button | |
| NORM (normal) SPEED button | |
| [10] BALANCE control [11] | |
| [11] Tape COUNTER and RESET button | |
| [12] REC (recording) LEVEL control [11] [12] | |
| [13] ▲ (eject) button (deck B) | |

*Remote control sensor

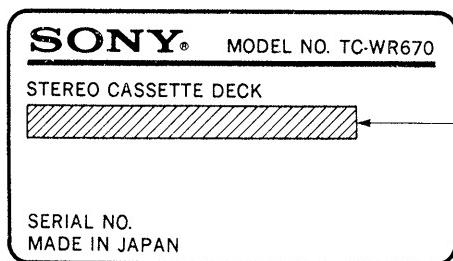
You can remotely control this cassette deck with:

- A remote commander that came with a Sony amplifier or receiver if it has the  mark and cassette deck control capability.
- Any optional Sony remote commander with the  mark and cassette deck control capability.

**AMS is an abbreviation for Automatic Music Sensor.

MODEL IDENTIFICATION

—Specification Label—



US, Canadian model: AC120V 60Hz 29W
 AEP, Germany model: AC220-230V~50/60Hz
 UK model: AC240V~50/60Hz
 E model: AC120, 220, 240V~50/60Hz 29W

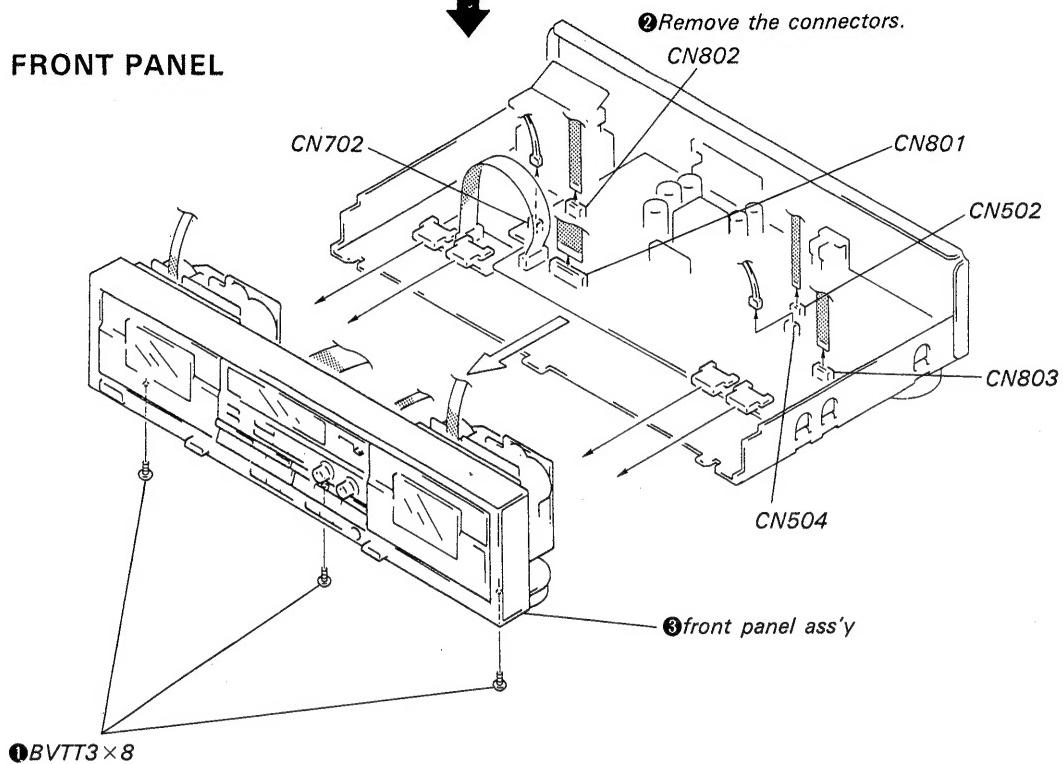
SECTION 2 DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

CASE

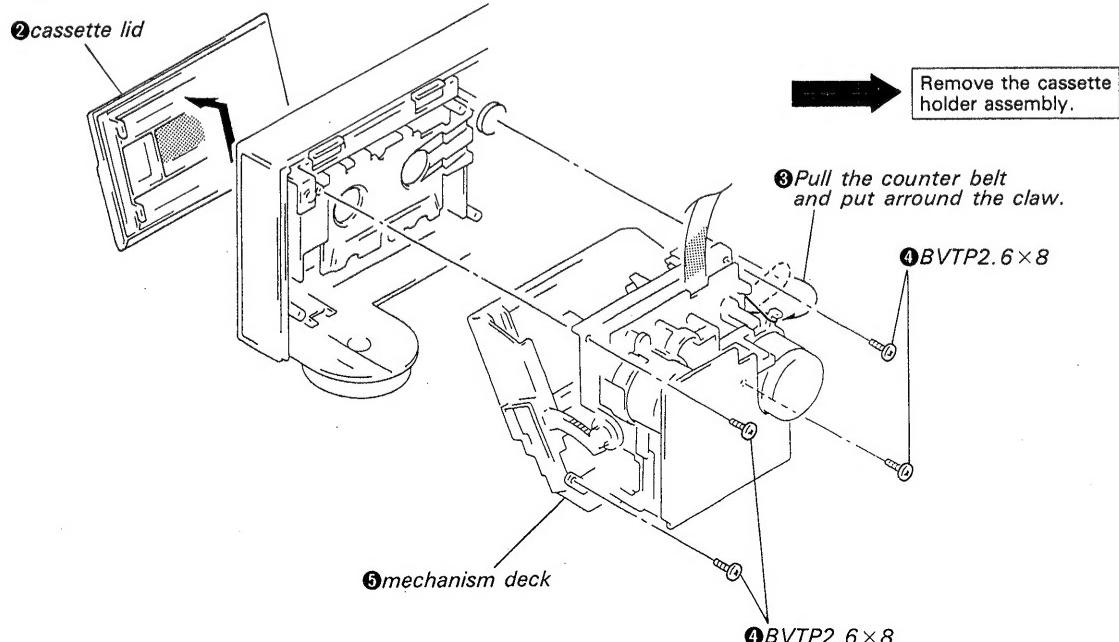
Unscrew the four case attachment screws M3×8 and remove the case.

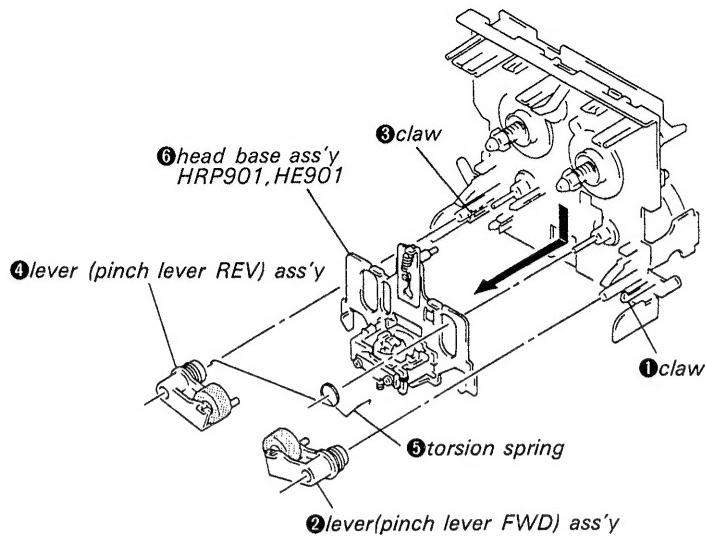
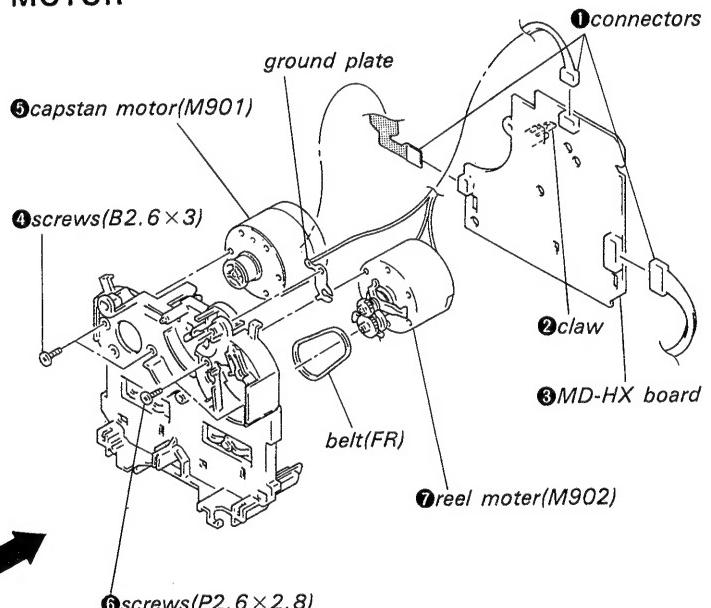
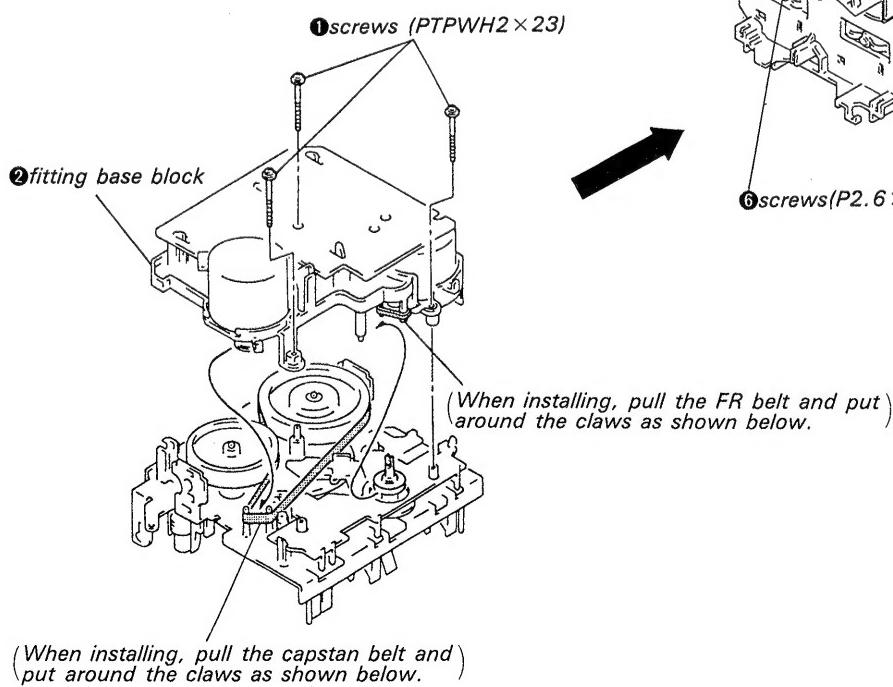
FRONT PANEL



MECHANISM DECK

① Press the EJECT button.



HEAD**MOTOR****FITTING BASE BLOCK**

SECTION 3

PIN DESCRIPTION

● IC801 M50944-170SP (MICRO COMPUTER)

The M50944-170SP function are described below.

Pin No.	Name	I/O	Description
1	V _{REF}	I	Inputs reference voltage to the A-D converter.
2 1 9	IN ₇ IN ₀	I	An 8-bit analog input pin for the A-D converter. It can be used as a normal input port.
10	P4 ₇ /S _{RDY2}		
11	P4 ₆ /CLK ₂		
12	P4 ₅ /S _{OUT2}		
13	P4 ₄ /S _{IN2}		
14	P4 ₃ /INT ₄		
15	P4 ₂ /INT ₃		
16	P4 ₁		
17	P4 ₀		
18	P3 ₇ /S _{RDY1}		
19	P3 ₆ /CLK ₁		
20	P3 ₅ /S _{OUT1}		
21	P3 ₄ /S _{IN1}		
22	P3 ₃ /T		
23	P3 ₂ /CNTR		
24	P3 ₁ /INT ₁		
25	P3 ₀ /INT ₁		
26	CNV _{ss}	—	Connect to V _{ss} .
27	RESET	I	Reset status is activated when the RESET signal goes "L" for more than 2μs. However, if it takes more time to stabilize the oscillation of crystal resonator, etc., apply "L" level for duration meeting that time.
28	X _{IN}	I	Input/output of main clock generation circuit. A clock generation circuit is built in, and the oscillation frequency is set by connecting a ceramic resonator or crystal oscillator between X _{IN} and X _{OUT} . If external clock is to be used, connect the clock source to X _{IN} and open the X _{OUT} .
29	X _{OUT}	O	
30	X _{CIN}	I	Input/output of clock generation circuit for clock. To set the oscillation frequency, connect a ceramic resonator or crystal oscillator between X _{CIN} and X _{COUT} .
31	X _{COUT}	O	If external clock is to be used, connect the clock source to X _{CIN} and open the X _{COUT} . This clock can also be used as a system clock by the program setting.
32	V _{ss}	—	Apply 5V±10% to V _{cc} and 0V to V _{ss} .

Pin No.	Name	I/O	Description
33	ϕ	0	Outputs the timing signal.
34 37	R_3 R_0	I	Port R is a 4-bit input port.
38	NC	—	(Short-circuit to V_{DD})
39 46	$P1_7$ $P1_0$	I/O	Port P1 is an 8-bit input/output port, and it provides almost same function as port P0.
47 54	$P0_7$ $P0_0$	I/O	Port P0 is an 8-bit input/output port. The I/O register is built in, and whether this port is to be used for input or output can be selected for each bit by the program. The input mode is selected at the reset. Output is executed in the N-channel open drain format, and a pull-up transistor can optionally be inserted between P0 and V_{CC} .
55 62	$P2_7$ $P2_0$	I/O	Port P2 is an 8-bit input/output port, and it provides almost same function as port P0.
63	AV_{CC}	—	Inputs power supply to the A-D converter.
64	V_{CC}	—	Apply $5V \pm 10\%$ to V_{CC} and 0V to V_{SS} .

SECTION 4 ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:

record/playback/erase head	pinch roller
rubber belts	capstan
idle	
2. Demagnetize the record/playback head with a head demagnetizer.
(Head demagnetizer do not approach for the erase head.)
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

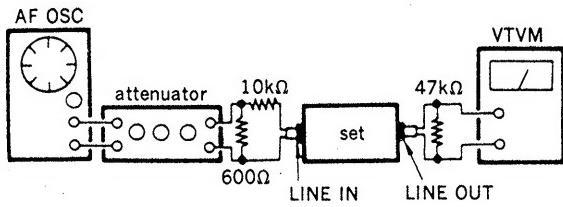
Torque	Torque meter	Meter reading
Forward	CQ-102C	30 to 65g·cm (0.42 to 0.9 oz·inch)
Forward back tension	CQ-102C	DECK A : 1 to 6g·cm (0.014 to 0.08 oz·inch) DECK B : 2 to 9g·cm (0.03 to 0.12 oz·inch)
Reverse	CQ-102RC	30 to 65g·cm (0.42 to 0.9 oz·inch)
Reverse back tension	CQ-102RC	1 to 6g·cm (0.014 to 0.08 oz·inch)
Forward, Reverse	CQ-201B	70 to 120g·cm (0.98 to 1.67 oz·inch)

4-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. The adjustment should be performed in the publication.
(Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
 - Switch position
DOLBY NR switch : OFF
DIR MODE switch : \leftrightarrow
 - Standard record position
Deliver the standard input signal level to input jack and set the REC LEVEL control to obtain the standard output signal level as follows.

—Record Mode—



Standard Input Level

Input terminal	LINE IN
source impedance	10kΩ
input signal level	0.25V (-10dB)

Standard Output Level

Output terminal	LINE OUT
load impedance	47kΩ
output signal level	0.44V (-5dB)

Test Tape

Tape	Contents	Use
P-4-A100	10kHz, -10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	PB Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

$$0\text{dB} = 0.775\text{V}$$

Test Mode

Short the test point CN804

(place the IC801 pin 6 in "L" status) on the MAIN board with the power turned off, then turn the power on before adjustment.

Executes high speed dubbing when the HIGH SPEED (DUBBING) button is pressed during dubbing.

When pressing this button again, the normal speed dubbing is restored.

After adjustment, break the short condition.

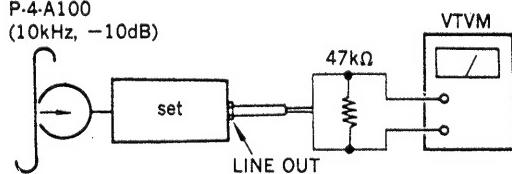
The DECK A and B can be adjusted in the same manner.

Record/Playback Head Azimuth Adjustment

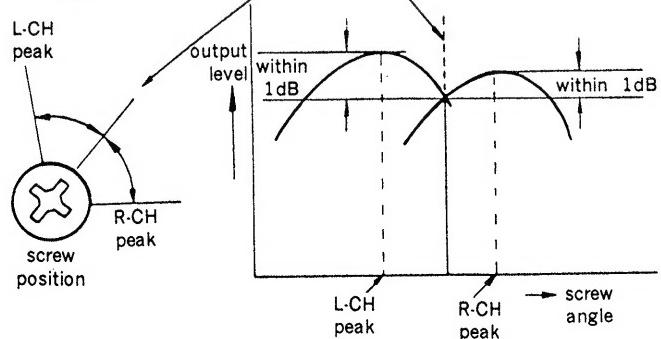
Procedure :

1. Forward Playback Mode

test tape
P-4-A100
(10kHz, -10dB)

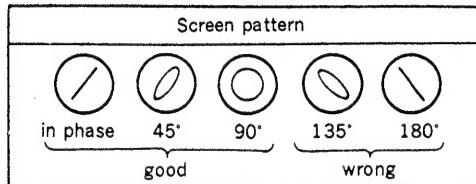
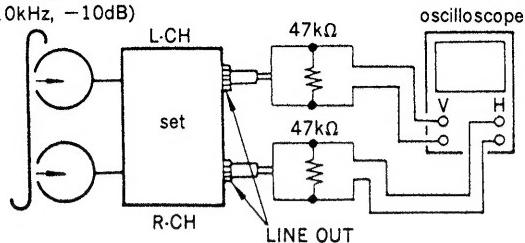


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.



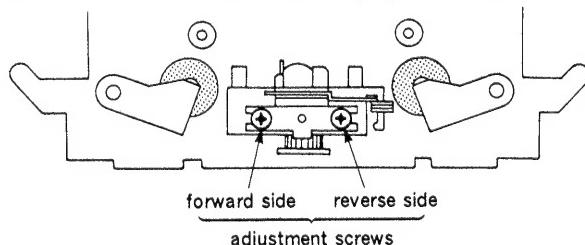
3. Playback Mode

test tape
P-4-A100
(10kHz, -10dB)



4. Change the reverse playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location : —record/playback head—

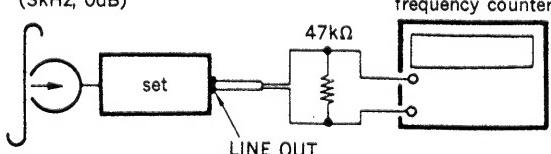


Tape Speed Adjustment

Procedure :

—Forward Playback Mode—

test tape
WS-48B
(3kHz, 0dB)



Perform high speed adjustment before normal speed adjustment.

(high speed adjustment)

1. Short test pin CN804 on MAIN board.
2. Set to FWD playback mode.
3. Keep on pressing the HIGH SPEED DUBBING switch.
4. Adjust RV72 so that the frequency counter reading becomes $6,000 \pm 20\text{Hz}$.
5. After adjustment, disconnect CN804 shorted in step 1.

(normal speed adjustment)

1. Set to FWD playback mode.
2. Adjust RV71 so that the frequency counter reading becomes $3,000 \pm 10\text{Hz}$.

Frequency difference between the beginning and the end of the tape should be within 3%.

Frequency difference between deck A and deck B the beginning of the tape should be within 1.5%.

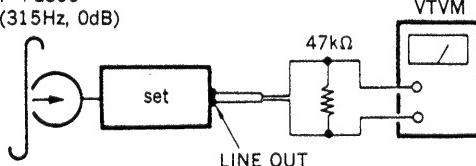
Adjustment Location : AUDIO board

Playback Level Adjustment

Procedure :

—Forward Playback Mode—

test, tape
P-4-L300
(315Hz, 0dB)



Asjust deck A, B : RV11 (L-CH) and RV21 (R-CH) so the VTVM reading becomes the adjustment limits below.

Adjustment Value :

LINE OUT level : $-5 \pm 0.5\text{dB}$ (0.412 to 0.461V)

Level Difference between Channels : within 0.5dB

Confirm the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

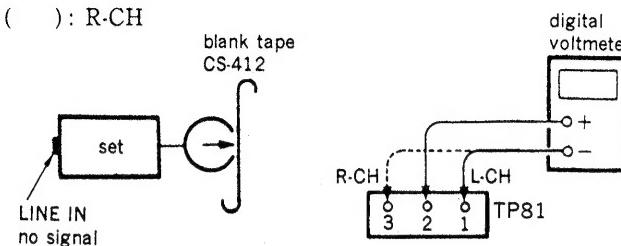
Adjustment Location : AUDIO board

Bias Consumption Current Adjustment

This adjustment should be performed when replacing the head assy or the bias oscillating transformer (T81, T91).

Procedure :

() : R-CH



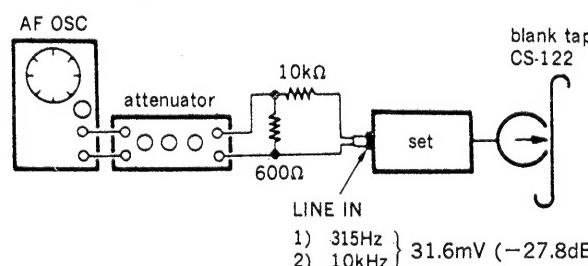
1. Connect the digital voltmeter to test point TP81.
2. Set RV81 (RV91) to mechanical center.
3. Set to FWD record mode.
4. Adjust T81 (T91) so that the digital voltmeter reading becomes minimum.

Adjustment Location : AUDIO board**Record Bias Adjustment****Setting :**

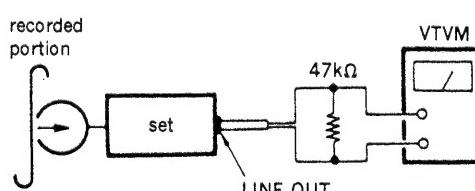
REC LEVEL control: standard record position (Refer to page 8.)

Procedure :

1. Record Mode



2. Playback Mode



Playbk the signal recorded in step 1.

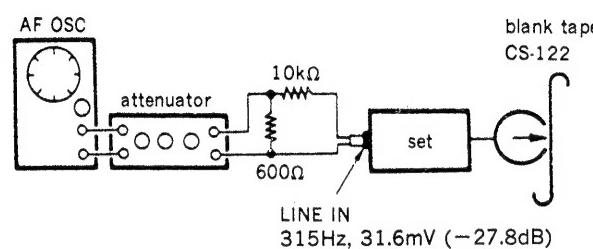
Confirm that the 10kHz playback output is $0 \pm 0.5\text{dB}$ relative to the 315Hz output. If necessary, adjust RV81 (L-CH), RV91 (R-CH) and repeat the steps given above.

Adjustment Location : AUDIO board**Record Level Adjustment****Setting :**

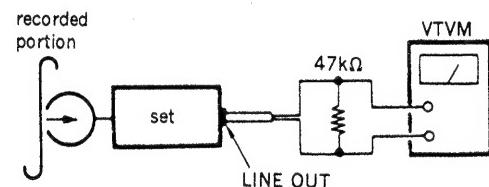
REC LEVEL control: standard record position (Refer to page 8.)

Procedure :

1. Record Mode

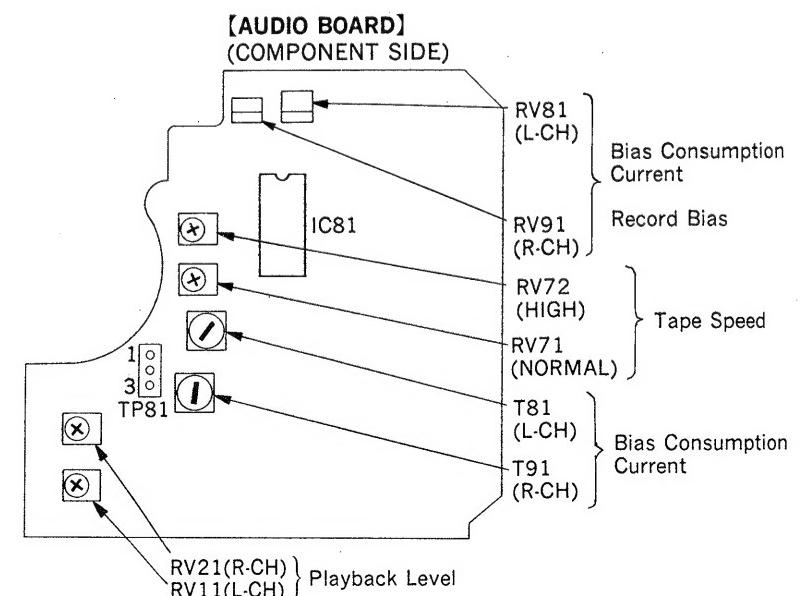
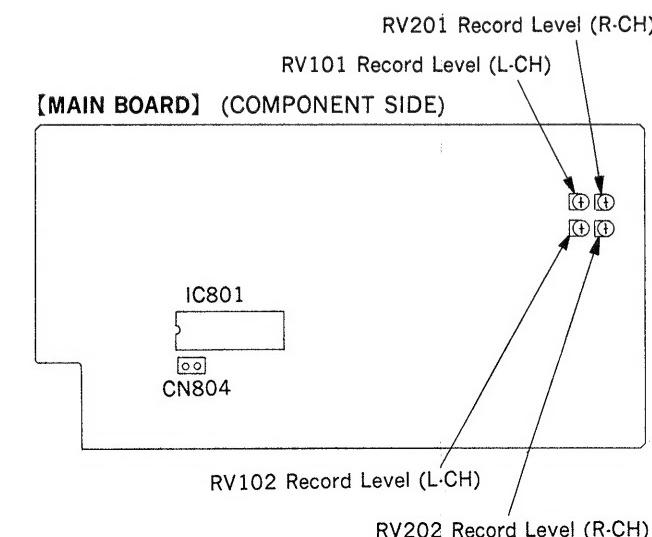


2. Playback Mode



Confirm playback the tape recorded become adjustment level as follows.

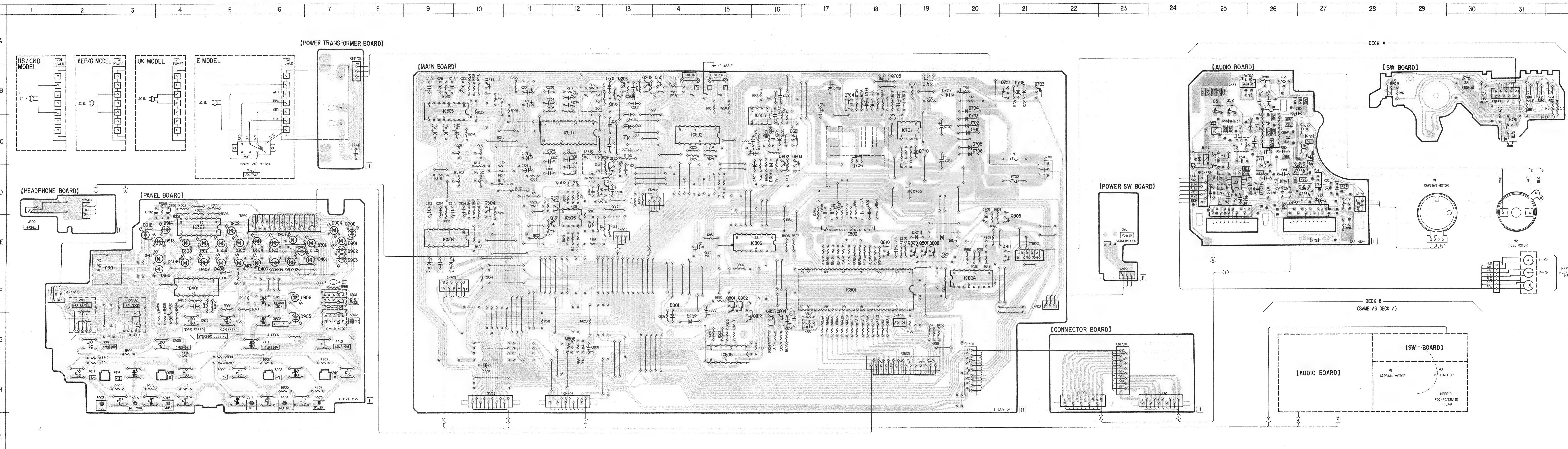
If necessary, adjust RV101, 102 (L-CH), RV201, 202 (R-CH) and repeat steps 1 and 2.

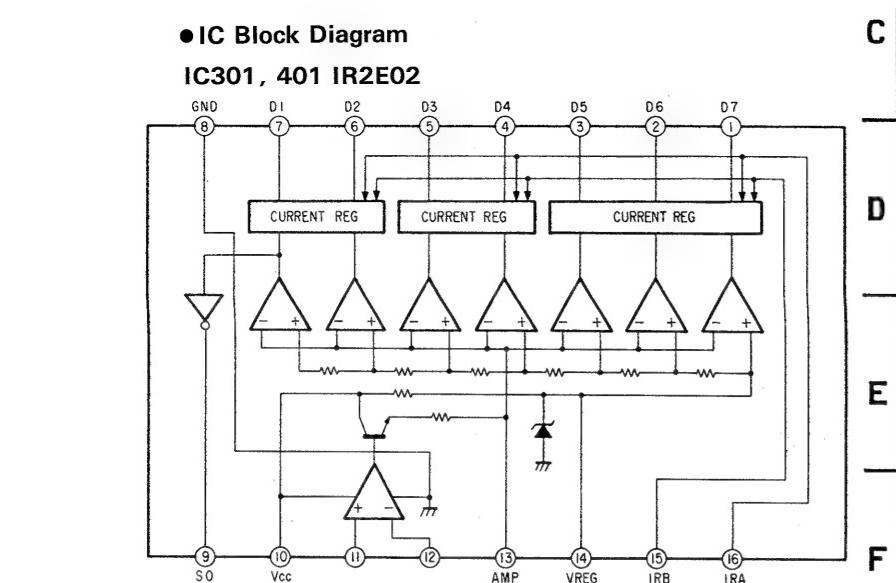
Adjustment Value :LINE OUT level: $-27.8 \pm 0.5\text{dB}$ (29 to 33.4mV)**Adjustment Location :** MAIN board**—Adjustment Parts Location Diagrams—**

**SECTION 5
DIAGRAMS**

Note:
 • : Through hole.
 • : parts extracted from the component side.
 • : Pattern on the side which is seen.
 • : parts extracted from the conductor side.
 • : Pattern of the rear side.

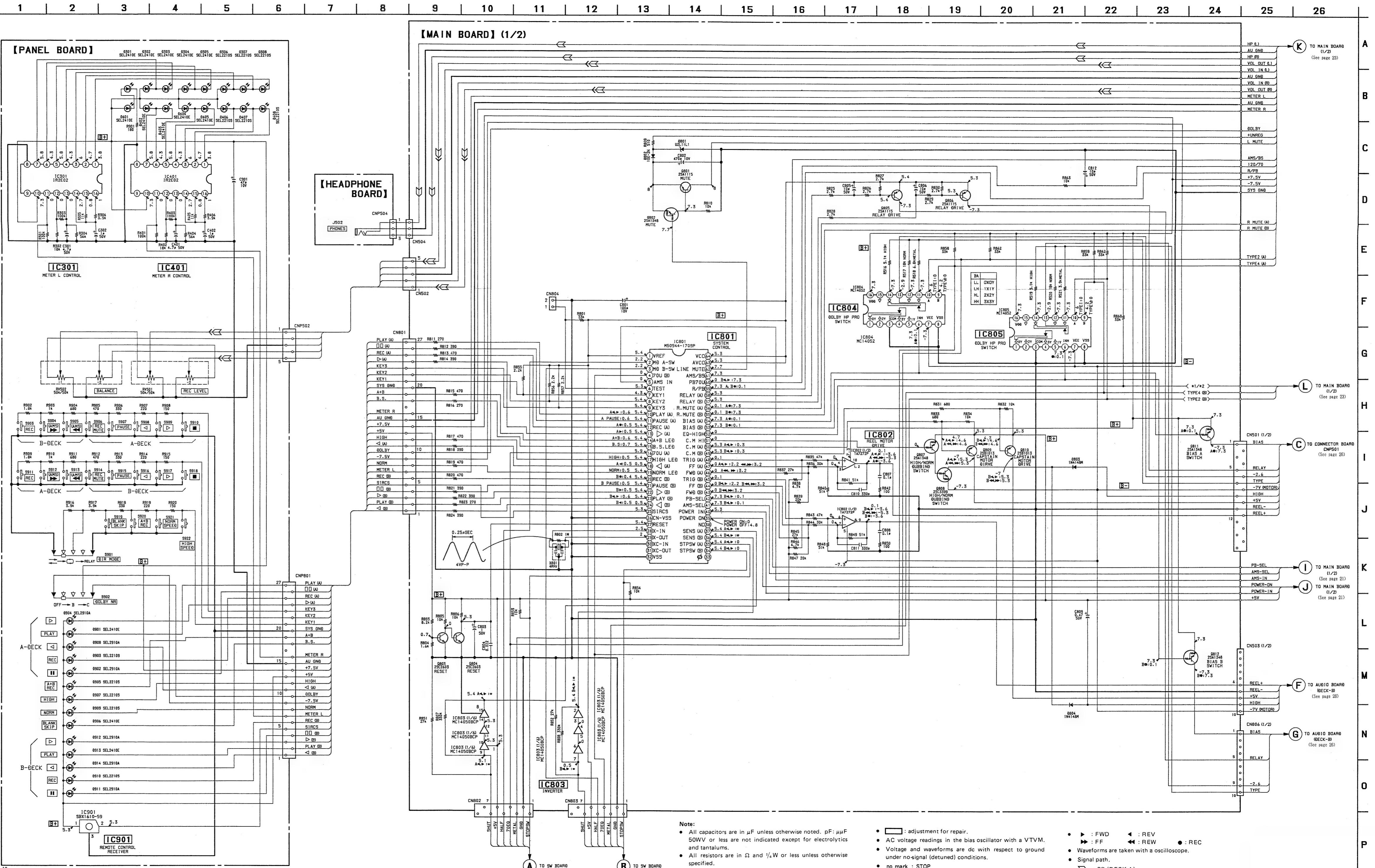
CND : Canadian model
 G : Germany model

5-1. PRINTED WIRING BOARDS • See page 24 for Circuit board Location and Semiconductor Lead Layouts.




● Semiconductor Location ● (): board

Ref. No.	Location	Ref. No.	Location
D31	C-24	IC701	C-19
D301	E-7	IC801	F-17
D302	E-6	IC802	E-17
D303	E-6	IC803	E-16
D304	E-6	IC804	F-20
D305	E-5	IC805	G-15
D306	E-5	IC901	F-3
D307	E-4		
D308	E-4		
D401	E-7	Q51	B-25
D402	E-6	Q52	B-25
D403	E-6	Q53	C-25
D404	E-6	Q71	C-27
D405	E-5	Q101	E-12
D406	E-5	Q102	C-13
D407	E-8	Q103	D-13
D408	E-8	Q201	D-12
D501	B-13	Q202	B-13
D601	D-16	Q203	B-13
D701	C-20	Q502	D-12
D702	C-20	Q503	B-10
D703	C-20	Q504	D-10
D704	B-20	Q601	C-16
D705	C-20	Q602	C-16
D706	C-20	Q603	C-16
D707	B-19	Q701	B-21
D708	B-21	Q702	B-19
D709	B-18	Q703	B-21
D710	C-19	Q704	B-17
D801	G-14	Q705	B-18
D802	G-14	Q706	C-18
D803	E-19	Q801	F-15
D804	E-19	Q802	F-15
D901	E-7	Q803	G-16
D902	E-7	Q804	G-16
D903	E-7	Q805	E-21
D904	E-7	Q806	G-12
D905	G-6	Q807	E-19
D906	F-6	Q808	E-19
D907	E-6	Q809	E-19
D908	E-7	Q810	E-18
D909	E-5	Q811	E-21
D910	E-4	Q812	G-15
D911	E-3		
D912	E-4		
D913	E-4		
D914	E-4		
IC31	D-25		
IC81(AUDIO)	C-26		
IC81(SW)	C-31		
IC301			
IC401	F-4		
IC501	C-12		
IC502	C-14		
IC503	B-9		
IC504	E-9		
IC505	B-16		
IC506	E-12		



Note:
 • All capacitors are in μ F unless otherwise noted. pF: $\mu\mu$ F 50V or less are not indicated except for electrolytics and tantalums.
 • All resistors are in Ω and $1/4$ W or less unless otherwise specified.
 • % : indicates tolerance.
 • △ : internal component.
 • H+ : B+ Line
 • H- : B- Line

• ▶ : FWD ◀ : REV
 • ▶ : FF ◀◀ : REW
 • ● : REC
 • Waveforms are taken with a oscilloscope.
 • Signal path.
 • □ : PB (DECK A)
 • □□ : REC (DECK A)

* : Impossible to measure the voltage at the marked points.

Note:
 • All capacitors are in μ F unless otherwise noted. pF: $\mu\mu$ F
 50V or less are not indicated except for electrolytics and tantalums.
 • All resistors are in Ω and $1/4$ W or less unless otherwise specified.
 • % indicates tolerance.

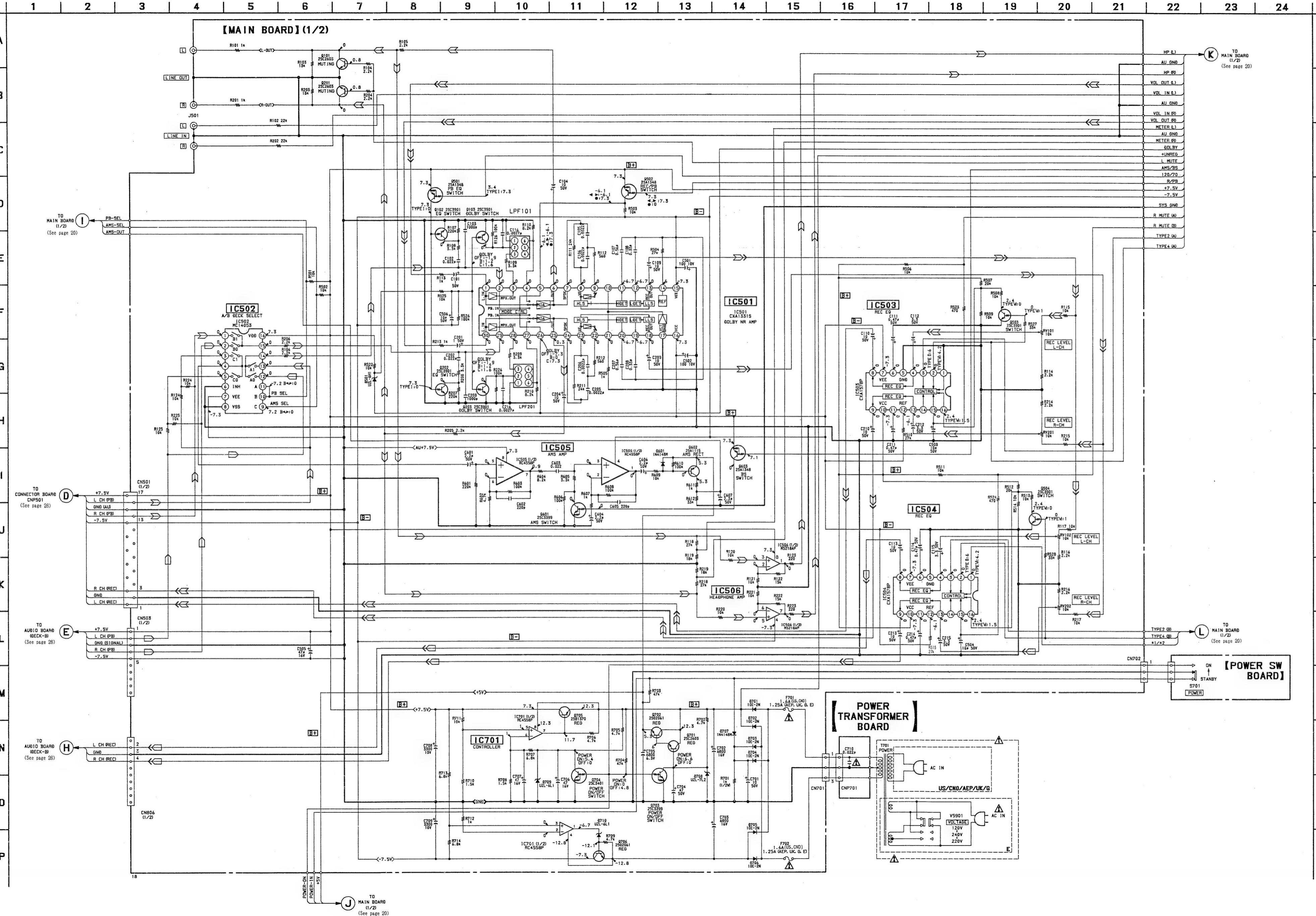
- \square : B+ Line
- \square : B- Line
- \square : adjustment for repair.
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- mark: STOP
- \blacktriangleright : FWD \blacktriangleleft : REV \bullet : REC

- Voltages are taken with a VOM (Input Impedance 10M Ω).
 Voltage variations may be noted due to normal production tolerances.
- Signal path: \square : PB (DECK A)
 \square : REC (DECK A)
 \square : PB (DECK B)
 \square : REC (DECK B)

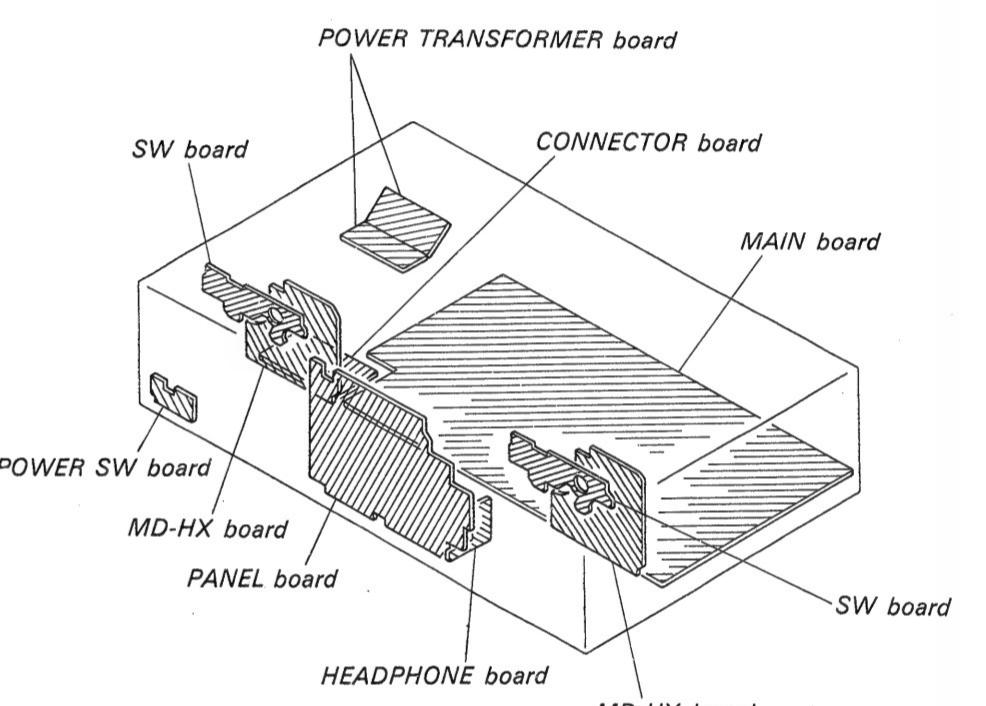
Note:
 The components identified by mark or dotted line with mark are critical for safety.
 Replace only with part number specified.

- CND : Canadian model
 G : Germany model

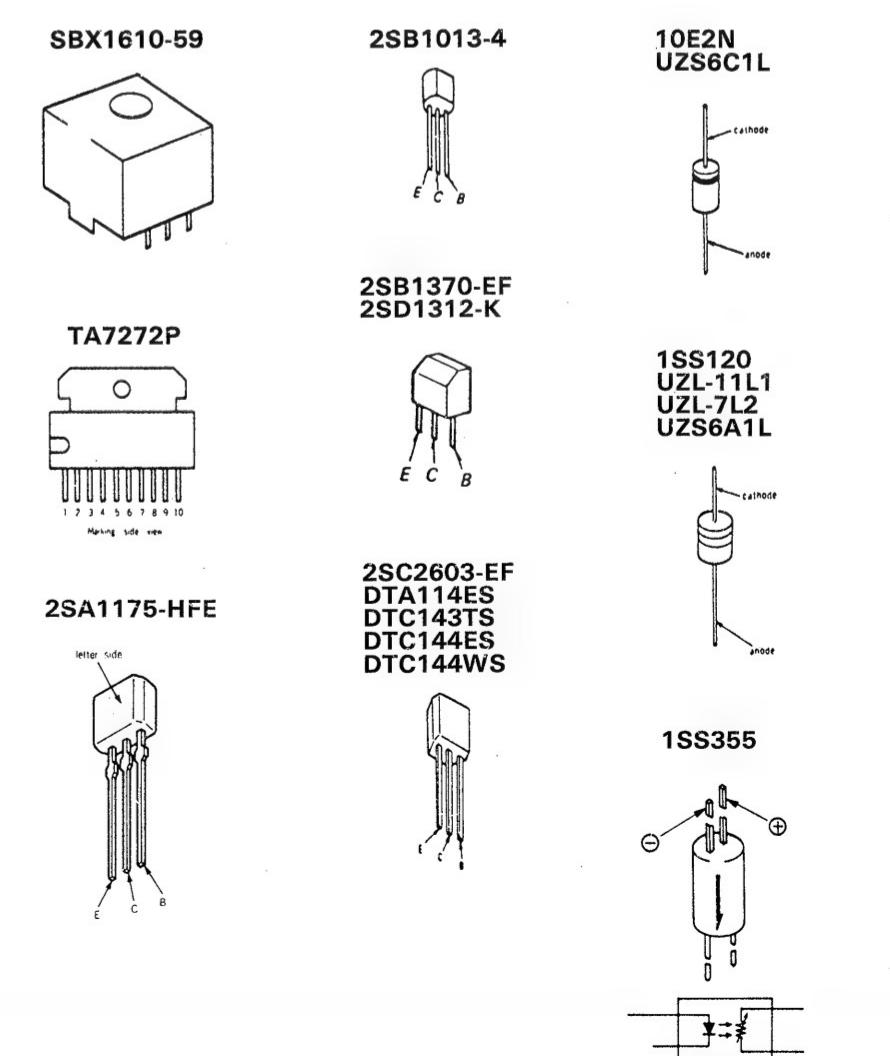
5-3. SCHEMATIC DIAGRAM — Audio Section —



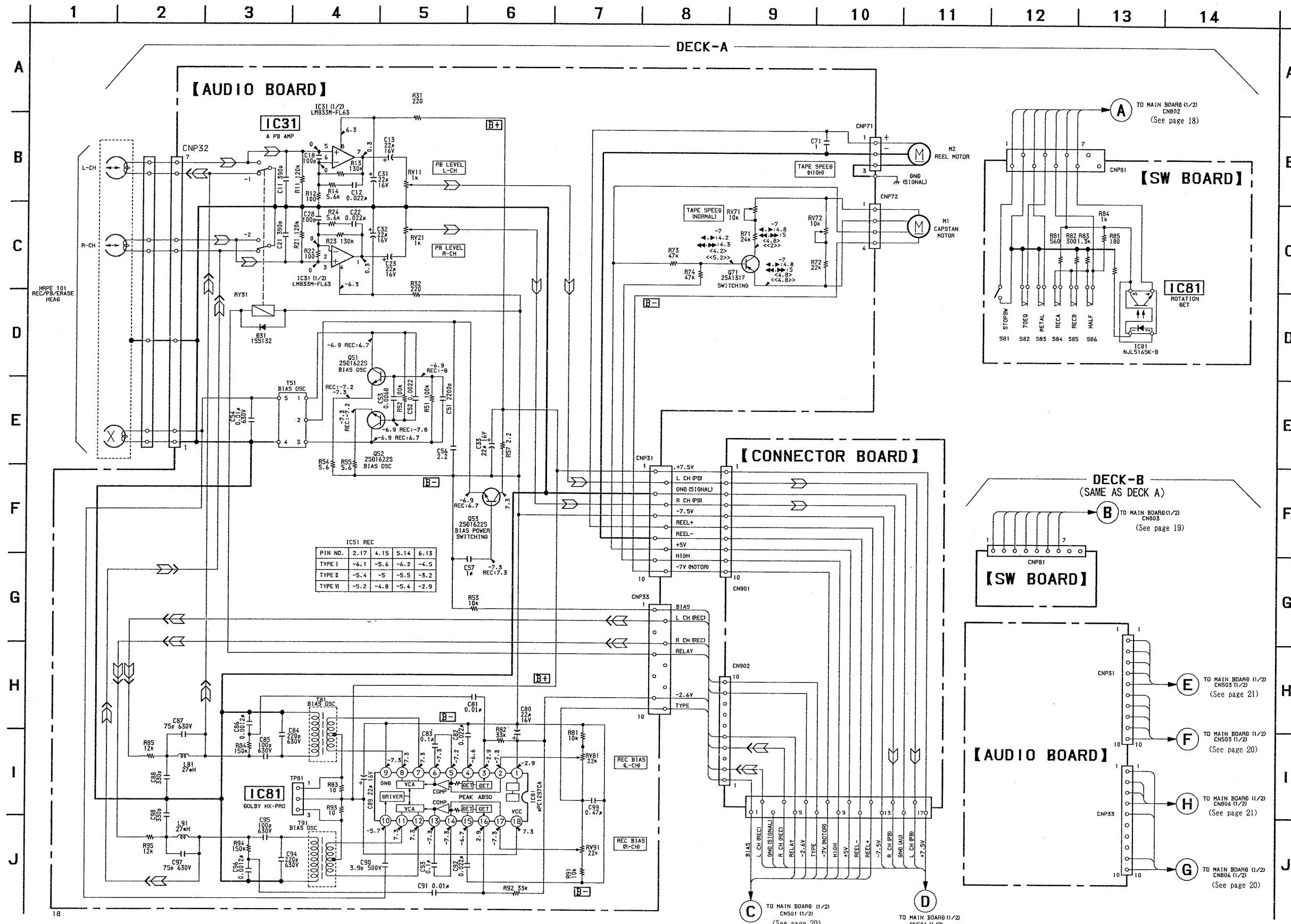
5-4. CIRCUIT BOARDS LOCATION



5-5. SEMICONDUCTOR LEAD LAYOUTS



5-6. SCHEMATIC DIAGRAM – MD Section –



Note:

- All capacitors are in μF unless otherwise noted. pF: $\mu\mu\text{F}$ 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.

- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.

- B+** : B+ Line
- B-** : B- Line
- : adjustment for repair.
- Signal path:
 \Rightarrow : PB (DECK A)
 \gg : REC (DECK A)

- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- no mark : STOP
 $< >$: NORMAL SPEED DUBBING
 $\ll \gg$: HIGH SPEED DUBBING

- \blacktriangleright : FWD \blacktriangleleft : REV
 $\blacktriangleright\blacktriangleright$: FF $\blacktriangleleft\blacktriangleleft$: REW
- Voltages are taken with a VOM (Input Impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.

SECTION 6

EXPLODED VIEWS

NOTE:

- $-XX$, $-X$ mean standardized parts, so they may have some differences from the original one.
 - The mechanical parts with no reference number in the exploded views are not supplied.
 - Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

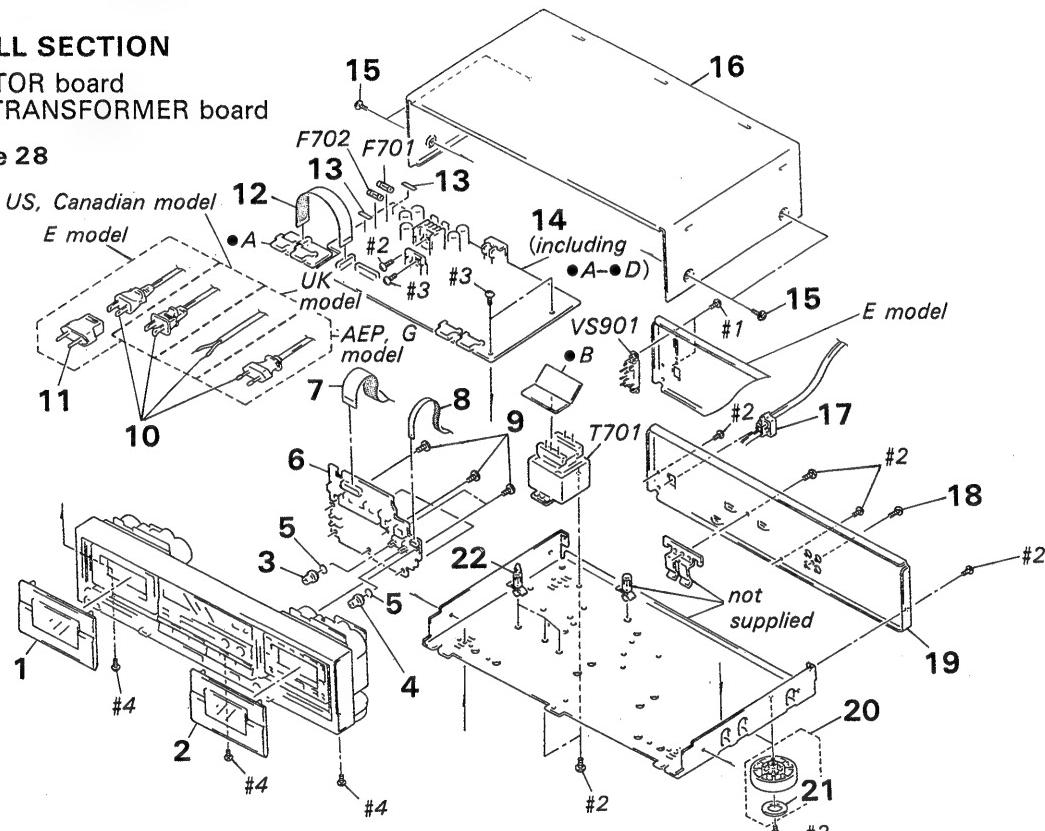
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE(WHITE)...(RED)
 ↑ ↑
 Part's Color Cabinet's Color
 - Hardware (#mark) list is given in the last of this parts list.
 - G : Germany

The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. OVERALL SECTION

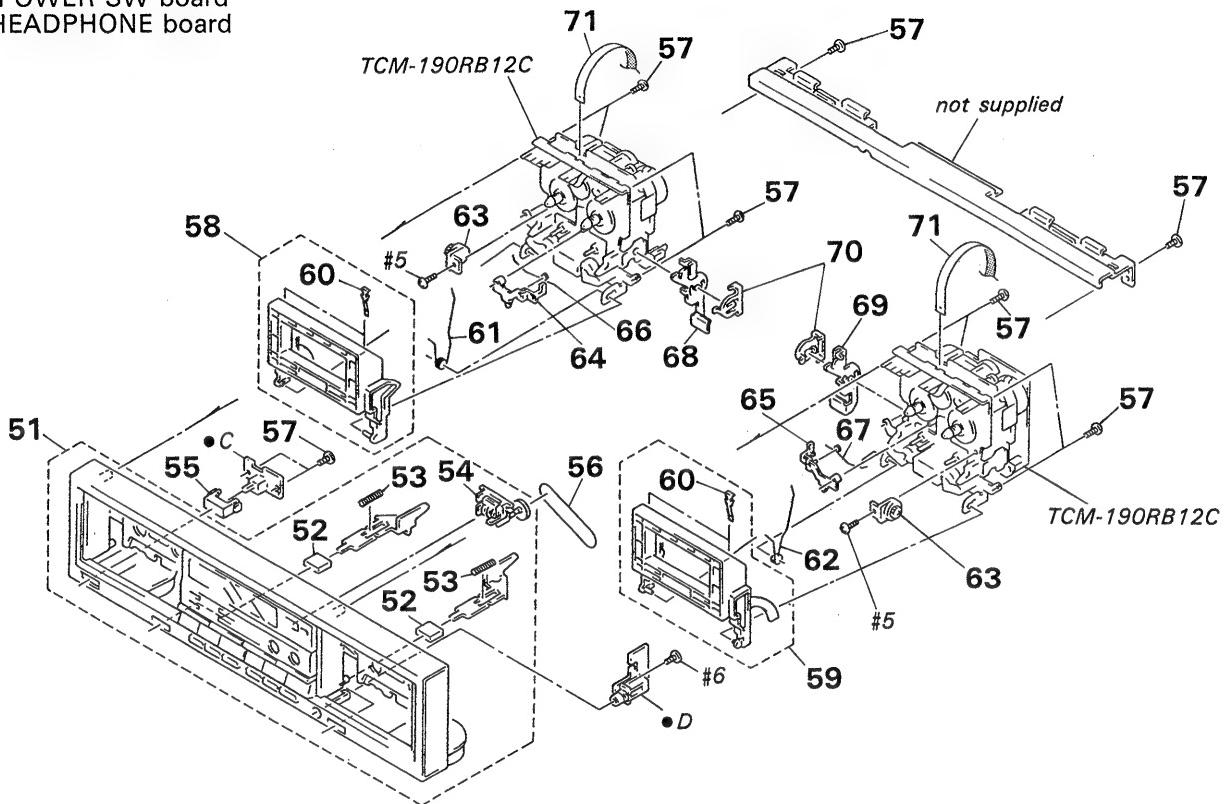
- A: CONNECTOR board
 - B: POWER TRANSFORMER board
 - C } See page 28
 - D }



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3362-988-1	LID (A) ASSY, CASSETTE		19	* 3-365-372-01	PANEL, BACK (US, Canadian)	
2	X-3362-989-1	LID (B) ASSY, CASSETTE		19	* 3-365-372-11	PANEL, BACK (UK)	
3	3-367-431-01	KNOB (BAL)		19	* 3-365-372-31	PANEL, BACK (AEP, G)	
4	3-367-431-11	KNOB (REC)		19	* 3-365-372-41	PANEL, BACK (E)	
5	3-356-957-01	SPRING		20	X-4885-950-1	FOOT ASSY (US, Canadian)	
6	* A-2006-443-A	PANEL BOARD, COMPLETE		20	X-3304-938-2	FOOT ASSY (AEP, UK, G, E)	
7	1-590-826-11	WIRE, FLAT TYPE (27 CORE)		21	4-923-836-11	CUSHION	
8	1-575-663-11	WIRE, FLAT TYPE (5 CORE)		22	* 3-346-265-11	HOLDER, PC BOARD	
9	4-928-635-01	SCREW, +BV (2.6X8) TAPPING		F701	△ 1-532-285-00	FUSE, TIME-LAG 1.25A (AEP, UK, G, E)	
10	△ 1-555-795-00	CORD, POWER, EULO PLUG (AEP, G)		F701	△ 1-532-741-11	FUSE, GLASS TUBE 1.6A (US, Canadian)	
10	△ 1-551-506-XX	CORD, POWER (US, Canadian)		F702	△ 1-532-285-00	FUSE, TIME-LAG 1.25A (AEP, UK, G, E)	
10	△ 1-556-035-00	CORD, POWER (UK)		F702	△ 1-532-741-11	FUSE, GLASS TUBE 1.6A (US, Canadian)	
10	△ 1-551-188-XX	CORD, POWER (E)		T701	△ 1-449-420-21	TRANSFORMER, POWER (US, Canadian)	
11	△ 1-569-007-11	ADAPTOR, CONVERSION 2P (E)		T701	△ 1-449-666-21	TRANSFORMER, POWER (E)	
12	1-575-218-11	WIRE, FLAT TYPE (17 CORE)		T701	△ 1-450-465-11	TRANSFORMER, POWER (AEP, UK, G)	
13	3-701-947-12	LABEL (T1.25A), FUSE (AEP, UK, G)		VS901	△ 1-570-307-11	SWITCH, VOLTAGE CHANGE (VOLTAGE) (E)	
14	* A-2006-442-A	MAIN BOARD, COMPLETE					
15	3-704-366-01	SCREW (CASE) (M3X8)					
16	* 4-929-294-42	CASE					
17	* 3-703-244-00	BUSHING (2104), CORD (AEP, UK, G)					
17	* 3-703-571-11	BUSHING (S) (4516), CORD (US, Canadian, E)					
18	7-621-849-00	SCREW (BV/RING)					

6-2. FRONT PANEL SECTION

- C: POWER SW board
- D: HEADPHONE board

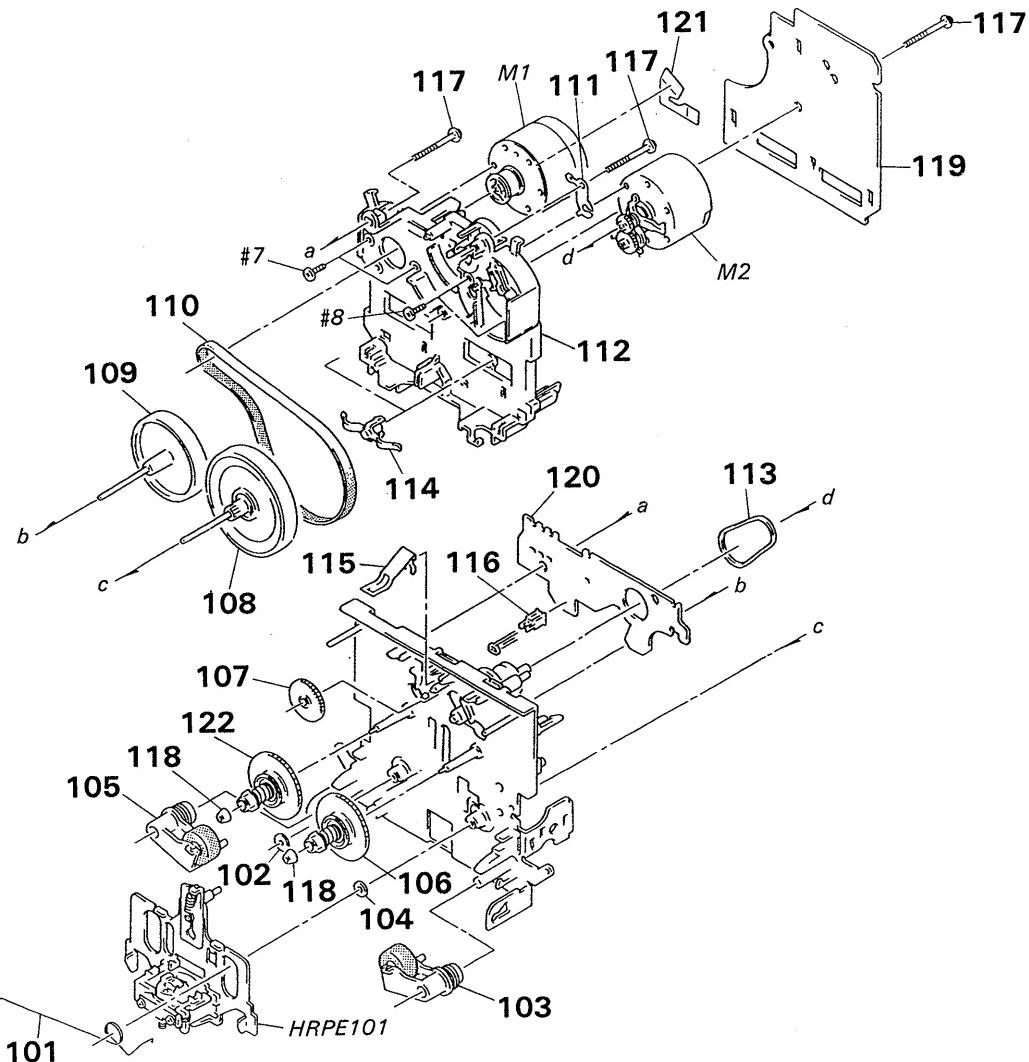


Ref. No.	Part No.	Description	Remark
51	X-3362-991-1	PANEL ASSY, FRONT (US, Canadian)	
51	X-3362-990-1	PANEL ASSY, FRONT (AEP, UK, G, E)	
52	3-340-188-11	BUTTON (EJECT)	
53	3-363-762-01	SPRING, COMPRESSION	
54	1-548-596-41	COUNTER, TAPE (MIDDLE TYPE)	
55	3-354-932-01	BUTTON (POWER)	
56	3-499-042-XX	BELT, COUNTER	
57	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
58	X-3340-195-1	HOLDER (R) ASSY, CASSETTE	
59	X-3340-194-1	HOLDER (L) ASSY, CASSETTE	
60	3-308-823-11	SPRING	

Ref. No.	Part No.	Description	Remark
61	3-354-960-01	SPRING (LOADING R), TORSION	
62	3-354-959-01	SPRING (LOADING L), TORSION	
63	3-354-963-01	DAMPER	
64	3-354-956-01	LEVER (EJ SAFETY LEVER R)	
65	3-354-955-01	LEVER (EJ SAFETY LEVER L)	
66	3-354-962-01	SPRING (EJ SAFETY SPRING R)	
67	3-354-961-01	SPRING (EJ SAFETY SPRING L)	
68	* 3-354-954-01	LEVER (LOCK LEVER R)	
69	* 3-354-953-01	LEVER (LOCK LEVER L)	
70	3-354-957-01	JOINT (LOCK LEVER)	
71	* 1-575-850-11	WIRE, FLAT TYPE (9 CORE)	

6-3. MECHANISM SECTION 1

(TCM-190RB12C)

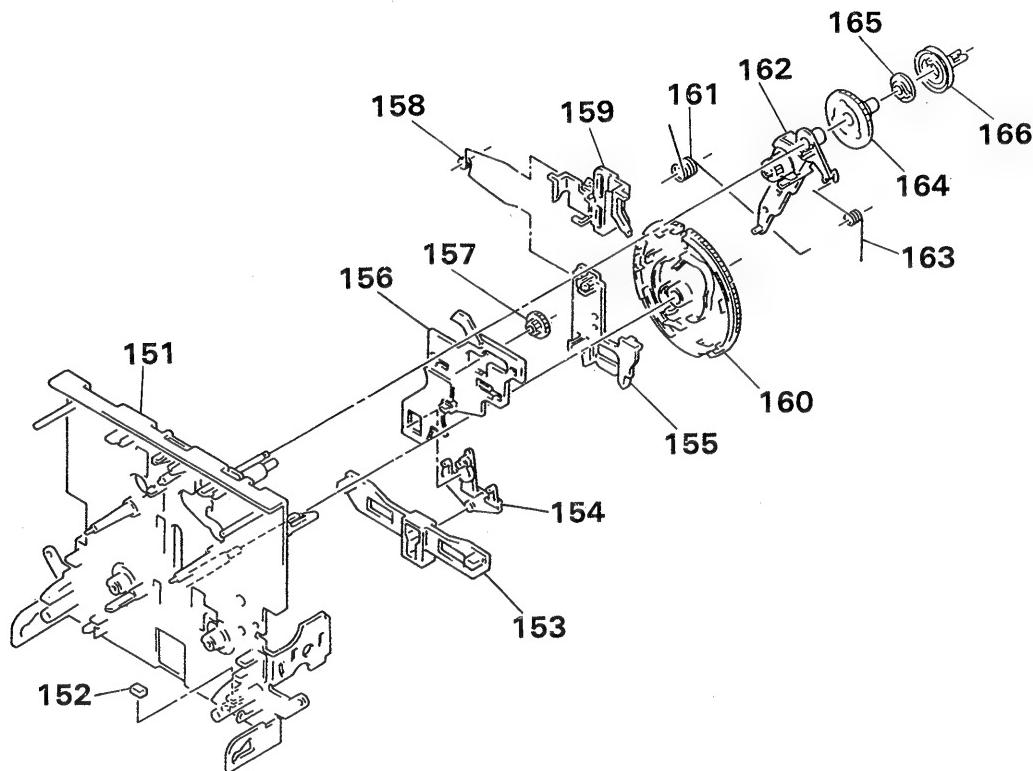


Ref. No.	Part No.	Description	Remark
101	3-359-455-01	SPRING, TORSION	
102	3-356-714-01	WASHER	
103	X-3359-408-1	LEVER (PINCH LEVER FWD) ASSY	
104	3-356-713-01	WASHER	
105	X-3359-409-1	LEVER (PINCH LEVER REV) ASSY	
106	X-3359-404-1	TABLE ASSY, REEL	
107	3-359-424-01	GEAR (REV GEAR)	
108	X-3359-406-1	FLYWHEEL (FWD) COMPLETE ASSY	
109	X-3359-410-1	FLYWHEEL (REV) ASSY	
110	3-359-417-01	BELT (FLAT), CAPSTAN	
111	3-359-450-01	PLATE, GROUND	
112	* 3-359-436-01	BASE (THRUST RETAINER), FITTING	
113	3-359-466-01	BELT (FR), SQUARE	

Ref. No.	Part No.	Description	Remark
114	3-575-321-00	RETAINER, THRUST, CAPSTAN	
115	3-359-430-01	SPRING (CASSETTE RETAINER), LEAF	
116	3-343-419-01	HOLDER (S SENSER A)	
117	3-359-414-01	SCREW (+PTPWH 2X23)	
118	3-362-308-01	CAP (REEL)	
119	* A-2006-401-A	MOUNDED PCB (RB12A), AUDIO	
120	* 1-634-841-11	SW BOARD	
121	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
122	X-3362-078-1	TABLE ASSY (B), REEL	
HRPE101	A-2003-838-A	BASE ASSY, HEAD (REC/PB/ERASE)	
M1	X-3359-417-1	MOTOR (CAPSTAN) ASSY	
M2	A-2003-474-A	MOTOR (REEL) ASSY	

6-4. MECHANISM SECTION 2

(TCM-19ORB12C)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	X-3359-415-1	CHASSIS ASSY, MECHANICAL		159	3-359-429-01	SLIDER (BRAKE PLATE)	
152	3-359-469-01	SPACER		160	3-359-420-01	GEAR (CAM GEAR)	
153	* 3-359-425-01	SLIDER (REVERSE SLIDER)		161	3-359-456-01	SPRING (TRIGGER SPRING), TORSION	
154	3-359-426-01	LEVER (REVERSE LEVER)		162	X-3359-405-1	LEVER (FR ARM) ASSY	
155	* 3-359-427-01	SLIDER (LEVERSE SLIDER)		163	3-359-453-01	SPRING (FR ARM), TORSION	
156	* 3-359-415-01	SLIDER (TRIGGER SLIDER)		164	3-359-419-01	GEAR (FR GEAR)	
157	3-359-448-01	GEAR (TRIGGER)		165	3-359-421-01	CLUTCH (REEL DISK)	
158	3-359-454-01	SPRING, TORSION		166	3-359-418-01	PULLEY (FR PULLEY)	

SECTION 7

ELECTRICAL PARTS LIST

AUDIO**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

● RESISTORS

All resistors are in ohms
METAL : Metal-film resistor
METAL OXIDE : Metal Oxide-film resistor

F : nonflammable

● SEMICONDUCTORS

In each case, u:μ, for example:
uA… : μA…, uP A… : μPA…,
uP B… : μPB…, uP C… : μPC…,
uP D… : μPD…

● G : Germany**● CAPACITORS**

uF : μF

● COILS

uH : μH

The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark					
* A-2006-401-A AUDIO BOARD, COMPLETE													

< CAPACITOR >													
C11	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	C91	1-164-232-11	CERAMIC CHIP	0.01uF	50V			
C12	1-136-157-00	FILM	0.022uF	5%	50V	C92	1-136-157-00	FILM	0.022uF	5% 50V			
C13	1-124-234-00	ELECT	22uF	20%	16V	C93	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V			
C18	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	C94	1-136-437-11	FILM	220PF	5% 630V			
C21	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	C95	1-136-433-11	FILM	100PF	5% 630V			
C22	1-136-157-00	FILM	0.022uF	5%	50V	C96	1-163-143-00	CERAMIC CHIP	0.0012uF	5% 50V			
C23	1-124-234-00	ELECT	22uF	20%	16V	C97	1-136-273-91	FILM	75PF	5% 630V			
C28	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	C98	1-163-003-11	CERAMIC CHIP	330PF	10% 50V			
C31	1-124-234-00	ELECT	22uF	20%	16V	C99	1-164-005-11	CERAMIC CHIP	0.47uF	25V			
C32	1-124-234-00	ELECT	22uF	20%	16V	< CONNECTOR >							
C33	1-124-234-00	ELECT	22uF	20%	16V	CNP31	* 1-580-782-11	SOCKET, CONNECTOR					
C51	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	CNP32	* 1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P					
C52	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	CNP33	* 1-580-782-11	SOCKET, CONNECTOR					
C53	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	CNP71	* 1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P					
C54	1-136-601-11	FILM	0.01uF	5%	630V	CNP72	* 1-580-411-11	SOCKET, CONNECTOR 4P					
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V	< DIODE >							
C57	1-164-346-11	CERAMIC CHIP	1uF		16V	D31	8-719-988-62	DIODE 1SS355					
C71	1-164-346-11	CERAMIC CHIP	1uF		16V	< IC >							
C80	1-124-234-00	ELECT	22uF	20%	16V	IC31	8-759-970-67	IC LM833M					
C81	1-164-232-11	CERAMIC CHIP	0.01uF		50V	IC81	8-759-106-56	IC uPC1297CA					
C82	1-136-157-00	FILM	0.022uF	5%	50V	< COIL >							
C83	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	L81	1-410-780-11	INDUCTOR 27mH					
C84	1-136-437-11	FILM	220PF	5%	630V	L91	1-410-780-11	INDUCTOR 27mH					
C85	1-136-433-11	FILM	100PF	5%	630V	< TRANSISTOR >							
C86	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V	Q51	8-729-808-01	TRANSISTOR 2SD1622-S					
C87	1-136-273-91	FILM	75PF	5%	630V	Q52	8-729-808-01	TRANSISTOR 2SD1622-S					
C88	1-163-003-11	CERAMIC CHIP	330PF	10%	50V	Q53	8-729-808-01	TRANSISTOR 2SD1622-S					
C89	1-124-234-00	ELECT	22uF	20%	16V	Q71	8-729-216-22	TRANSISTOR 2SA1162					
C90	1-107-045-00	MICA	3.9PF		500V								

AUDIO MAIN

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark			
< RESISTOR >					< TEST PIN >						
R11	1-216-099-00	METAL CHIP	120K	5%	1/10W	TP81	* 1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P			
R12	1-216-025-00	METAL CHIP	100	5%	1/10W		*****				
R13	1-216-100-00	METAL GLAZE	130K	5%	1/10W		*****				
R14	1-216-067-00	METAL CHIP	5.6K	5%	1/10W		*****				
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W		* A-2006-442-A MAIN BOARD, COMPLETE				

R22	1-216-025-00	METAL CHIP	100	5%	1/10W		*****				
R23	1-216-100-00	METAL GLAZE	130K	5%	1/10W		* 1-533-213-31 HOLDER, FUSE				
R24	1-216-067-00	METAL CHIP	5.6K	5%	1/10W		* 1-533-213-31 HOLDER, FUSE				
R31	1-216-033-00	METAL CHIP	220	5%	1/10W		* 4-363-147-00 HEAT SINK, H. PIN				
R32	1-216-033-00	METAL CHIP	220	5%	1/10W		7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3				
							7-682-547-04 SCREW +BVTT 3X6 (S)				
R51	1-216-097-00	METAL CHIP	100K	5%	1/10W		*****				
R52	1-216-097-00	METAL CHIP	100K	5%	1/10W		< CAPACITOR >				
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W	C101	1-126-301-11	ELECT	1uF	20%	50V
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W	C102	1-136-157-00	FILM	0.022uF	5%	50V
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W	C103	1-162-294-31	CERAMIC	0.001uF	10%	50V
R57	1-216-298-00	METAL CHIP	2.2	5%	1/10W	C104	1-126-059-11	ELECT	10uF	20%	50V
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W	C105	1-130-475-00	MYLAR	0.0022uF	5%	50V
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W	C106	1-130-475-00	MYLAR	0.0022uF	5%	50V
R73	1-216-089-00	METAL CHIP	47K	5%	1/10W	C107	1-136-174-00	FILM	0.56uF	5%	50V
R74	1-216-089-00	METAL CHIP	47K	5%	1/10W	C108	1-136-171-00	FILM	0.33uF	5%	50V
R81	1-216-073-00	METAL CHIP	10K	5%	1/10W	C109	1-126-059-11	ELECT	10uF	20%	50V
R82	1-216-085-00	METAL CHIP	33K	5%	1/10W	C110	1-126-059-11	ELECT	10uF	20%	50V
R83	1-216-001-00	METAL CHIP	10	5%	1/10W	C111	1-126-300-11	ELECT	0.47uF	20%	50V
R84	1-216-101-00	METAL CHIP	150K	5%	1/10W	C112	1-126-162-11	ELECT	3.3uF	20%	50V
R85	1-216-075-00	METAL CHIP	12K	5%	1/10W	C113	1-126-059-11	ELECT	10uF	20%	50V
R91	1-216-073-00	METAL CHIP	10K	5%	1/10W	C114	1-126-300-11	ELECT	0.47uF	20%	50V
R92	1-216-085-00	METAL CHIP	33K	5%	1/10W	C115	1-126-162-11	ELECT	3.3uF	20%	50V
R93	1-216-001-00	METAL CHIP	10	5%	1/10W	C116	1-130-476-00	MYLAR	0.0027uF	5%	50V
R94	1-216-101-00	METAL CHIP	150K	5%	1/10W	C201	1-126-301-11	ELECT	1uF	20%	50V
R95	1-216-075-00	METAL CHIP	12K	5%	1/10W	C202	1-136-157-00	FILM	0.022uF	5%	50V
< VARIABLE RESISTOR >					C203	1-162-294-31	CERAMIC	0.001uF	10%	50V	
< RELAY >					C204	1-126-059-11	ELECT	10uF	20%	50V	
RY31	1-515-726-11	RELAY			C205	1-130-475-00	MYLAR	0.0022uF	5%	50V	
< TRANSFORMER >					C206	1-130-475-00	MYLAR	0.0022uF	5%	50V	
T51	1-406-417-11	COIL, BIAS OSCILLATION			C207	1-136-174-00	FILM	0.56uF	5%	50V	
T81	1-433-367-11	TRANSFORMER, BIAS OSSCILATION			C208	1-136-171-00	FILM	0.33uF	5%	50V	
T91	1-433-367-11	TRANSFORMER, BIAS OSSCILATION			C209	1-126-059-11	ELECT	10uF	20%	50V	
					C210	1-126-059-11	ELECT	10uF	20%	50V	
					C211	1-126-300-11	ELECT	0.47uF	20%	50V	
					C212	1-126-162-11	ELECT	3.3uF	20%	50V	
					C213	1-126-059-11	ELECT	10uF	20%	50V	
					C214	1-126-300-11	ELECT	0.47uF	20%	50V	
					C215	1-126-162-11	ELECT	3.3uF	20%	50V	
					C216	1-130-476-00	MYLAR	0.0027uF	5%	50V	
					C501	1-124-994-11	ELECT	100uF	20%	10V	
					C502	1-124-994-11	ELECT	100uF	20%	10V	
					C503	1-126-059-11	ELECT	10uF	20%	50V	

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark								
C504	1-126-059-11	ELECT	10uF	20%	50V	< DIODE >											
C505	1-126-022-11	ELECT	47uF	20%	16V	D501	8-719-933-39	DIODE UZS6C1L									
C506	1-126-059-11	ELECT	10uF	20%	50V	D601	8-719-912-20	DIODE 1SS120									
C601	1-126-161-11	ELECT	2.2uF	20%	50V	D701	8-719-200-77	DIODE 10E2N									
C602	1-162-286-31	CERAMIC	220PF	10%	50V	D702	8-719-200-77	DIODE 10E2N									
C603	1-161-494-00	CERAMIC	0.022uF		25V	D703	8-719-200-77	DIODE 10E2N									
C604	1-126-161-11	ELECT	2.2uF	20%	50V	D704	8-719-200-77	DIODE 10E2N									
C605	1-162-286-31	CERAMIC	220PF	10%	50V	D705	8-719-200-77	DIODE 10E2N									
C606	1-126-161-11	ELECT	2.2uF	20%	50V	D706	8-719-200-77	DIODE 10E2N									
C607	1-126-161-11	ELECT	2.2uF	20%	50V	D707	8-719-912-20	DIODE 1SS120									
C701	1-126-059-11	ELECT	10uF	20%	50V	D708	8-719-000-78	DIODE UZL-7L2									
C702	1-124-894-11	ELECT	6800uF	20%	16V	D709	8-719-933-33	DIODE UZS6A1L									
C703	1-124-894-11	ELECT	6800uF	20%	16V	D710	8-719-933-33	DIODE UZS6A1L									
C704	1-124-910-11	ELECT	47uF	20%	50V	D801	8-719-001-33	DIODE UZL-11L1									
C705	1-126-824-11	ELECT	6800uF	20%	6.3V	D802	8-719-200-77	DIODE 10E2N									
C706	1-126-022-11	ELECT	47uF	20%	16V	D803	8-719-912-20	DIODE 1SS120									
C707	1-126-022-11	ELECT	47uF	20%	16V	D804	8-719-912-20	DIODE 1SS120									
C708	1-126-928-11	ELECT	3300uF	20%	10V	< IC >											
C709	1-126-928-11	ELECT	3300uF	20%	10V	IC501	8-752-035-94	IC CXA1331S									
C710	△ 1-136-157-00	FILM	0.022uF	5%	50V	IC502	8-759-140-53	IC uPD4053BC									
C801	1-124-994-11	ELECT	100uF	20%	10V	IC503	8-752-055-61	IC CXA1578P									
C802	1-124-997-11	ELECT	470uF	20%	10V	IC504	8-752-055-61	IC CXA1578P									
C803	1-126-301-11	ELECT	1uF	20%	50V	IC505	8-759-945-58	IC RC4558P									
C804	1-161-494-00	CERAMIC	0.022uF		25V	IC506	8-759-634-51	IC M5218AP									
C805	1-126-059-11	ELECT	10uF	20%	50V	IC701	8-759-945-58	IC RC4558P									
C806	1-126-059-11	ELECT	10uF	20%	50V	IC801	8-759-636-53	IC M50944-170SP									
C807	1-136-165-00	FILM	0.1uF	5%	50V	IC802	8-759-207-05	IC TA7272P									
C808	1-136-165-00	FILM	0.1uF	5%	50V	IC803	8-759-240-50	IC TC4050BP									
C809	1-126-300-11	ELECT	0.47uF	20%	50V	IC804	8-759-000-48	IC MC14052BCP									
C810	1-162-288-31	CERAMIC	330PF	10%	50V	IC805	8-759-000-48	IC MC14052BCP									
C811	1-162-288-31	CERAMIC	330PF	10%	50V	< JACK >											
C812	1-126-059-11	ELECT	10uF	20%	50V	J501	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)									
< CONNECTOR >										< FILTER >							
CN501	* 1-568-836-11	SOCKET, CONNECTOR 17P									LPF101	1-231-388-00	FILTER, LOW PASS				
CN502	* 1-568-824-11	SOCKET, CONNECTOR 5P									LPF201	1-231-388-00	FILTER, LOW PASS				
CN503	* 1-580-824-11	PLUG, CONNECTOR									< TRANSISTOR >						
CN504	* 1-564-337-00	PIN, CONNECTOR 3P									Q101	8-729-620-05	TRANSISTOR 2SC2603-EF				
CN702	* 1-564-337-00	PIN, CONNECTOR 3P									Q102	8-729-900-74	TRANSISTOR DTC143TS				
CN801	* 1-568-842-11	SOCKET, CONNECTOR 27P									Q103	8-729-900-74	TRANSISTOR DTC143TS				
CN802	* 1-568-828-11	SOCKET, CONNECTOR 9P									Q201	8-729-620-05	TRANSISTOR 2SC2603-EF				
CN803	* 1-568-828-11	SOCKET, CONNECTOR 9P									Q202	8-729-900-74	TRANSISTOR DTC143TS				
CN804	* 1-564-505-11	PLUG, CONNECTOR 2P									Q203	8-729-900-74	TRANSISTOR DTC143TS				
CN806	* 1-580-824-11	PLUG, CONNECTOR									Q501	8-729-900-61	TRANSISTOR DTA114ES				
CN901	* 1-580-824-11	PLUG, CONNECTOR									Q502	8-729-900-61	TRANSISTOR DTA114ES				
CN902	* 1-580-824-11	PLUG, CONNECTOR									< Note: >						
CNP501	* 1-568-836-11	SOCKET, CONNECTOR 17P									The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	< Note: >					
CNP701	* 1-564-518-11	PLUG, CONNECTOR 3P									Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.						

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q503	8-729-900-74	TRANSISTOR DTC143TS		R125	1-249-429-11	CARBON	10K 5% 1/4W
Q504	8-729-900-74	TRANSISTOR DTC143TS		R126	1-249-441-11	CARBON	100K 5% 1/4W
Q601	8-729-900-89	TRANSISTOR DTC144ES		R201	1-249-417-11	CARBON	1K 5% 1/4W
Q602	8-729-119-76	TRANSISTOR 2SA1175-HFE		R202	1-249-433-11	CARBON	22K 5% 1/4W
Q603	8-729-900-61	TRANSISTOR DTA114ES		R203	1-247-858-11	CARBON	13K 5% 1/4W
Q701	8-729-620-05	TRANSISTOR 2SC2603-EF		R204	1-249-421-11	CARBON	2.2K 5% 1/4W
Q702	8-729-111-55	TRANSISTOR 2SD1312-K		R205	1-249-421-11	CARBON	2.2K 5% 1/4W
Q703	8-729-900-89	TRANSISTOR DTC144ES		R206	1-249-421-11	CARBON	2.2K 5% 1/4W
Q704	8-729-900-85	TRANSISTOR DTC144WS		R207	1-247-887-00	CARBON	220K 5% 1/4W
Q705	8-729-924-90	TRANSISTOR 2SB1370-EF		R208	1-249-423-11	CARBON	3.3K 5% 1/4W
Q706	8-729-111-55	TRANSISTOR 2SD1312-K		R209	1-249-423-11	CARBON	3.3K 5% 1/4W
Q801	8-729-119-76	TRANSISTOR 2SA1175-HFE		R210	1-249-428-11	CARBON	8.2K 5% 1/4W
Q802	8-729-900-61	TRANSISTOR DTA114ES		R211	1-247-864-11	CARBON	24K 5% 1/4W
Q803	8-729-620-05	TRANSISTOR 2SC2603-EF		R212	1-249-414-11	CARBON	560 5% 1/4W
Q804	8-729-620-05	TRANSISTOR 2SC2603-EF		R213	1-249-417-11	CARBON	1K 5% 1/4W
Q805	8-729-119-76	TRANSISTOR 2SA1175-HFE		R214	1-249-421-11	CARBON	2.2K 5% 1/4W
Q806	8-729-119-76	TRANSISTOR 2SA1175-HFE		R215	1-249-429-11	CARBON	10K 5% 1/4W
Q807	8-729-900-61	TRANSISTOR DTA114ES		R216	1-249-421-11	CARBON	2.2K 5% 1/4W
Q808	8-729-900-89	TRANSISTOR DTC144ES		R217	1-249-429-11	CARBON	10K 5% 1/4W
Q809	8-729-801-84	TRANSISTOR 2SB1013-4		R218	1-249-434-11	CARBON	27K 5% 1/4W
Q810	8-729-801-84	TRANSISTOR 2SB1013-4		R219	1-249-432-11	CARBON	18K 5% 1/4W
Q811	8-729-900-61	TRANSISTOR DTA114ES		R220	1-249-429-11	CARBON	10K 5% 1/4W
Q812	8-729-900-61	TRANSISTOR DTA114ES		R221	1-249-429-11	CARBON	10K 5% 1/4W
< RESISTOR >							
R101	1-249-417-11	CARBON	1K 5% 1/4W	R222	1-249-431-11	CARBON	15K 5% 1/4W
R102	1-249-433-11	CARBON	22K 5% 1/4W	R223	1-249-409-11	CARBON	220 5% 1/4W
R103	1-247-858-11	CARBON	13K 5% 1/4W	R224	1-249-429-11	CARBON	10K 5% 1/4W
R104	1-249-421-11	CARBON	2.2K 5% 1/4W	R225	1-249-429-11	CARBON	10K 5% 1/4W
R105	1-249-421-11	CARBON	2.2K 5% 1/4W	R226	1-249-441-11	CARBON	100K 5% 1/4W
R106	1-249-421-11	CARBON	2.2K 5% 1/4W	R501	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-247-887-00	CARBON	220K 5% 1/4W	R502	1-249-429-11	CARBON	10K 5% 1/4W
R108	1-249-423-11	CARBON	3.3K 5% 1/4W	R503	1-249-429-11	CARBON	10K 5% 1/4W
R109	1-249-423-11	CARBON	3.3K 5% 1/4W	R504	1-249-434-11	CARBON	27K 5% 1/4W
R110	1-249-428-11	CARBON	8.2K 5% 1/4W	R505	1-249-417-11	CARBON	1K 5% 1/4W
R111	1-247-864-11	CARBON	24K 5% 1/4W	R506	1-249-429-11	CARBON	10K 5% 1/4W
R112	1-249-414-11	CARBON	560 5% 1/4W	R507	1-247-862-11	CARBON	20K 5% 1/4W
R113	1-249-417-11	CARBON	1K 5% 1/4W	R508	1-249-429-11	CARBON	10K 5% 1/4W
R114	1-249-421-11	CARBON	2.2K 5% 1/4W	R509	1-249-429-11	CARBON	10K 5% 1/4W
R115	1-249-429-11	CARBON	10K 5% 1/4W	R510	1-215-434-11	CARBON	27K 5% 1/4W
R116	1-249-421-11	CARBON	2.2K 5% 1/4W	R511	1-249-429-11	CARBON	10K 5% 1/4W
R117	1-249-429-11	CARBON	10K 5% 1/4W	R512	1-247-862-11	CARBON	20K 5% 1/4W
R118	1-249-434-11	CARBON	27K 5% 1/4W	R513	1-249-429-11	CARBON	10K 5% 1/4W
R119	1-249-432-11	CARBON	18K 5% 1/4W	R514	1-249-429-11	CARBON	10K 5% 1/4W
R120	1-249-429-11	CARBON	10K 5% 1/4W	R515	1-215-434-11	CARBON	27K 5% 1/4W
R121	1-249-429-11	CARBON	10K 5% 1/4W	R516	1-247-848-11	CARBON	5.1K 5% 1/4W
R122	1-249-431-11	CARBON	15K 5% 1/4W	R517	1-249-432-11	CARBON	18K 5% 1/4W
R123	1-249-409-11	CARBON	220 5% 1/4W	R518	1-249-427-11	CARBON	6.8K 5% 1/4W
R124	1-249-429-11	CARBON	10K 5% 1/4W	R519	1-247-848-11	CARBON	5.1K 5% 1/4W

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R520	1-249-432-11	CARBON	18K 5% 1/4W	R815	1-249-413-11	CARBON	470 5% 1/4W
R521	1-249-427-11	CARBON	6.8K 5% 1/4W	R816	1-249-410-11	CARBON	270 5% 1/4W
R522	1-249-429-11	CARBON	10K 5% 1/4W	R817	1-249-413-11	CARBON	470 5% 1/4W
R523	1-249-413-11	CARBON	470 5% 1/4W	R818	1-249-412-11	CARBON	390 5% 1/4W
R524	1-249-413-11	CARBON	470 5% 1/4W	R819	1-249-413-11	CARBON	470 5% 1/4W
R525	1-249-429-11	CARBON	10K 5% 1/4W	R820	1-249-413-11	CARBON	470 5% 1/4W
R526	1-249-441-11	CARBON	100K 5% 1/4W	R821	1-249-412-11	CARBON	390 5% 1/4W
R527	1-249-435-11	CARBON	33K 5% 1/4W	R822	1-249-412-11	CARBON	390 5% 1/4W
R528	1-249-435-11	CARBON	33K 5% 1/4W	R823	1-249-410-11	CARBON	270 5% 1/4W
R601	1-247-887-00	CARBON	220K 5% 1/4W	R824	1-249-412-11	CARBON	390 5% 1/4W
R602	1-249-425-11	CARBON	4.7K 5% 1/4W	R825	1-249-422-11	CARBON	2.7K 5% 1/4W
R603	1-249-441-11	CARBON	100K 5% 1/4W	R826	1-249-422-11	CARBON	2.7K 5% 1/4W
R604	1-249-428-11	CARBON	8.2K 5% 1/4W	R827	1-249-422-11	CARBON	2.7K 5% 1/4W
R605	1-249-423-11	CARBON	3.3K 5% 1/4W	R828	1-249-422-11	CARBON	2.7K 5% 1/4W
R606	1-249-441-11	CARBON	100K 5% 1/4W	R829	1-249-422-11	CARBON	2.7K 5% 1/4W
R607	1-249-417-11	CARBON	.1K 5% 1/4W	R830	1-249-422-11	CARBON	2.7K 5% 1/4W
R608	1-249-441-11	CARBON	100K 5% 1/4W	R831	1-249-415-11	CARBON	680 5% 1/4W
R609	1-249-429-11	CARBON	10K 5% 1/4W	R832	1-249-429-11	CARBON	10K 5% 1/4W
R610	1-249-441-11	CARBON	100K 5% 1/4W	R833	1-249-415-11	CARBON	680 5% 1/4W
R611	1-249-417-11	CARBON	1K 5% 1/4W	R834	1-249-429-11	CARBON	10K 5% 1/4W
R612	1-249-435-11	CARBON	33K 5% 1/4W	R835	1-249-437-11	CARBON	47K 5% 1/4W
R701	1-247-752-11	CARBON	1K 5% 1/2W	R836	1-247-866-11	CARBON	30K 5% 1/4W
R702	1-249-425-11	CARBON	4.7K 5% 1/4W	R837	1-249-434-11	CARBON	27K 5% 1/4W
R703	1-249-437-11	CARBON	47K 5% 1/4W	R838	1-249-425-11	CARBON	4.7K 5% 1/4W
R704	1-249-437-11	CARBON	47K 5% 1/4W	R839	1-247-862-11	CARBON	20K 5% 1/4W
R705	1-249-425-11	CARBON	4.7K 5% 1/4W	R840	1-247-872-11	CARBON	51K 5% 1/4W
R706	1-249-425-11	CARBON	4.7K 5% 1/4W	R841	1-247-872-11	CARBON	51K 5% 1/4W
R707	1-249-427-11	CARBON	6.8K 5% 1/4W	R842	1-249-405-11	CARBON	100 5% 1/4W
R708	1-249-419-11	CARBON	1.5K 5% 1/4W	R843	1-249-437-11	CARBON	47K 5% 1/4W
R709	1-249-425-11	CARBON	4.7K 5% 1/4W	R844	1-247-866-11	CARBON	30K 5% 1/4W
R710	1-249-419-11	CARBON	1.5K 5% 1/4W	R845	1-249-434-11	CARBON	27K 5% 1/4W
R711	1-249-429-11	CARBON	10K 5% 1/4W	R846	1-249-425-11	CARBON	4.7K 5% 1/4W
R712	1-249-417-11	CARBON	1K 5% 1/4W	R847	1-247-862-11	CARBON	20K 5% 1/4W
R713	1-249-427-11	CARBON	6.8K 5% 1/4W	R848	1-247-872-11	CARBON	51K 5% 1/4W
R714	1-249-427-11	CARBON	6.8K 5% 1/4W	R849	1-247-872-11	CARBON	51K 5% 1/4W
R801	1-249-435-11	CARBON	33K 5% 1/4W	R850	1-249-405-11	CARBON	100 5% 1/4W
R802	1-247-903-00	CARBON	1M 5% 1/4W	R851	1-249-434-11	CARBON	27K 5% 1/4W
R803	1-249-428-11	CARBON	8.2K 5% 1/4W	R852	1-249-434-11	CARBON	27K 5% 1/4W
R804	1-247-836-11	CARBON	1.6K 5% 1/4W	R853	1-249-429-11	CARBON	10K 5% 1/4W
R805	1-249-429-11	CARBON	10K 5% 1/4W	R854	1-249-429-11	CARBON	10K 5% 1/4W
R806	1-249-429-11	CARBON	10K 5% 1/4W	R855	1-249-421-11	CARBON	2.2K 5% 1/4W
R807	1-247-891-00	CARBON	330K 5% 1/4W	R856	1-249-421-11	CARBON	2.2K 5% 1/4W
R808	1-247-891-00	CARBON	330K 5% 1/4W	R857	1-249-421-11	CARBON	2.2K 5% 1/4W
R809	1-249-442-11	CARBON	510 5% 1/4W	R858	1-249-435-11	CARBON	33K 5% 1/4W
R810	1-249-429-11	CARBON	10K 5% 1/4W	R859	1-249-435-11	CARBON	33K 5% 1/4W
R811	1-249-410-11	CARBON	270 5% 1/4W	R860	1-249-435-11	CARBON	33K 5% 1/4W
R812	1-249-412-11	CARBON	390 5% 1/4W	R861	1-249-435-11	CARBON	33K 5% 1/4W
R813	1-249-413-11	CARBON	470 5% 1/4W	R862	1-249-435-11	CARBON	33K 5% 1/4W
R814	1-249-412-11	CARBON	390 5% 1/4W	R863	1-249-429-11	CARBON	10K 5% 1/4W

MAIN PANEL

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark		
< VARIABLE RESISTOR >										
RV101	1-238-016-11	RES, ADJ, CARBON 10K	D905	8-719-301-38	LED SEL2210S-C (A+B/RBC)	D910	8-719-301-38	LED SEL2210S-C (B-RBC)		
RV102	1-238-016-11	RES, ADJ, CARBON 10K	D906	8-719-301-44	LED SEL2410E-D (BLANK SKIP)	D911	8-719-301-52	LED SEL2810A-C (B-III)		
RV201	1-238-016-11	RES, ADJ, CARBON 10K	D907	8-719-301-38	LED SEL2210S-C (HIGH)	D912	8-719-301-52	LED SEL2810A-C (B->D)		
RV202	1-238-016-11	RES, ADJ, CARBON 10K	D908	8-719-301-52	LED SEL2810A-C (A-<D)	D909	8-719-301-38	LED SEL2210S-C (NORM)		
< CERAMIC >										
X801	1-577-358-21	VIBRATOR, CERAMIC 4MHz	D913	8-719-301-44	LED SEL2410E-D (B-PLAY)	D914	8-719-301-52	LED SEL2810A-C (B-<D)		

* A-2006-443-A PANEL BOARD, COMPLETE										

* 3-354-966-01 HOLDER (DIR), LED										
* 3-354-972-01 HOLDER (METER), LED										
* 3-362-478-21 HOLDER (T), LED										
< CAPACITOR >										
C301	1-126-163-11	ELECT	4.7uF	20%	50V	R301	1-249-441-11	CARBON	100K	5% 1/4W
C302	1-126-301-11	ELECT	1uF	20%	50V	R302	1-249-432-11	CARBON	18K	5% 1/4W
C401	1-126-163-11	ELECT	4.7uF	20%	50V	R303	1-249-441-11	CARBON	100K	5% 1/4W
C402	1-126-301-11	ELECT	1uF	20%	50V	R304	1-249-438-11	CARBON	56K	5% 1/4W
C901	1-124-589-11	ELECT	47uF	20%	16V	R305	1-247-856-00	CARBON	11K	5% 1/4W
< CONNECTOR >										
CNP502	* 1-568-848-11	SOCKET, CONNECTOR 5P	R306	1-249-424-11	CARBON	3.9K	5% 1/4W			
CNP801	* 1-568-869-11	SOCKET, CONNECTOR 27P	R401	1-249-441-11	CARBON	100K	5% 1/4W			
< DIODE >										
D301	8-719-301-44	LED SEL2410E-D	R402	1-249-432-11	CARBON	18K	5% 1/4W			
D302	8-719-301-44	LED SEL2410E-D	R403	1-249-441-11	CARBON	100K	5% 1/4W			
D303	8-719-301-44	LED SEL2410E-D	R404	1-249-438-11	CARBON	56K	5% 1/4W			
D304	8-719-301-44	LED SEL2410E-D	R405	1-247-856-00	CARBON	11K	5% 1/4W			
D305	8-719-301-44	LED SEL2410E-D	R406	1-249-424-11	CARBON	3.9K	5% 1/4W			
D306	8-719-301-38	LED SEL2210S-C	R901	1-249-408-11	CARBON	180	5% 1/4W			
D307	8-719-301-38	LED SEL2210S-C	R902	1-249-420-11	CARBON	1.8K	5% 1/4W			
D308	8-719-301-38	LED SEL2210S-C	R903	1-249-417-11	CARBON	1K	5% 1/4W			
D401	8-719-301-44	LED SEL2410E-D	R904	1-249-415-11	CARBON	680	5% 1/4W			
D402	8-719-301-44	LED SEL2410E-D	R905	1-249-413-11	CARBON	470	5% 1/4W			
D403	8-719-301-44	LED SEL2410E-D	R906	1-249-411-11	CARBON	330	5% 1/4W			
D404	8-719-301-44	LED SEL2410E-D	R907	1-249-409-11	CARBON	220	5% 1/4W			
D405	8-719-301-44	LED SEL2410E-D	R908	1-249-407-11	CARBON	150	5% 1/4W			
D406	8-719-301-38	LED SEL2210S-C	R909	1-249-420-11	CARBON	1.8K	5% 1/4W			
D407	8-719-301-38	LED SEL2210S-C	R910	1-249-417-11	CARBON	1K	5% 1/4W			
D408	8-719-301-38	LED SEL2210S-C	R911	1-249-415-11	CARBON	680	5% 1/4W			
D901	8-719-301-44	LED SEL2410E-D (A-PLAY)	R912	1-249-413-11	CARBON	470	5% 1/4W			
D902	8-719-301-52	LED SEL2810A-C (A-III)	R913	1-249-411-11	CARBON	330	5% 1/4W			
D903	8-719-301-38	LED SEL2210S-C (A-RBC)	R914	1-249-409-11	CARBON	220	5% 1/4W			
D904	8-719-301-52	LED SEL2810A-C (A->D)	R915	1-249-407-11	CARBON	150	5% 1/4W			
			R916	1-249-424-11	CARBON	3.9K	5% 1/4W			
			R917	1-249-424-11	CARBON	3.9K	5% 1/4W			

Ref. No.	Part No.	Description	Remark
R918	1-249-411-11	CARBON	330 5% 1/4W
R919	1-249-409-11	CARBON	220 5% 1/4W
R920	1-249-407-11	CARBON	150 5% 1/4W
< VARIABLE RESISTOR >			
RV501	1-241-502-11	RES., VAR., CARBON 50K/50K (REC LEVEL)	
RV502	1-241-503-11	RES., VAR., CARBON 50K/50K (BALANCE)	
< SWITCH >			
S701	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	
S901	1-572-401-11	SWITCH, SLIDE (DIR MODE)	
S902	1-572-401-11	SWITCH, SLIDE (DOLBY NR)	
S903	1-554-596-21	SWITCH, KEY BOARD (B REC)	
S904	1-554-596-21	SWITCH, KEY BOARD (B FF)	
S905	1-554-596-21	SWITCH, KEY BOARD (B REW)	
S906	1-554-596-21	SWITCH, KEY BOARD (A REC MUTE)	
S907	1-554-596-21	SWITCH, KEY BOARD (A PAUSE)	
S908	1-554-596-21	SWITCH, KEY BOARD (A REV)	
S909	1-554-596-21	SWITCH, KEY BOARD (A FWD)	
S910	1-554-596-21	SWITCH, KEY BOARD (A STOP)	
S911	1-554-596-21	SWITCH, KEY BOARD (A REC)	
S912	1-554-596-21	SWITCH, KEY BOARD (A FF)	
S913	1-554-596-21	SWITCH, KEY BOARD (A REW)	
S914	1-554-596-21	SWITCH, KEY BOARD (B REC MUTE)	
S915	1-554-596-21	SWITCH, KEY BOARD (B PAUSE)	
S916	1-554-596-21	SWITCH, KEY BOARD (B REV)	
S917	1-554-596-21	SWITCH, KEY BOARD (B FWD)	
S918	1-554-596-21	SWITCH, KEY BOARD (B STOP)	
S919	1-554-596-21	SWITCH, KEY BOARD (BLANK SKIP)	
S920	1-554-596-21	SWITCH, KEY BOARD (A+B REC)	
S921	1-554-596-21	SWITCH, KEY BOARD (NORM SPEED)	
S922	1-554-596-21	SWITCH, KEY BOARD (HIGH SPEED)	

* 1-634-841-11 SW BOARD

3-343-419-01 HOLDER (S SENSER A)

< CONNECTOR >

CNP81 * 1-568-852-11 SOCKET, CONNECTOR 9P

< IC >

IC81 8-719-710-03 PHOTO INTERRUPTOR NJL5165K-B

Note:
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R81	1-249-414-11	CARBON	560 5% 1/4W
R82	1-247-818-11	CARBON	300 5% 1/4W
R83	1-247-834-11	CARBON	1.3K 5% 1/4W
R84	1-249-417-11	CARBON	1K 5% 1/4W
R85	1-249-408-11	CARBON	180 5% 1/4W

< SWITCH >

S81	1-571-958-11	SWITCH, PUSH (1 KEY) (STOP)
S82	1-571-281-21	SWITCH, LEAF (70EQ)
S83	1-571-281-21	SWITCH, LEAF (METAL)
S84	1-571-281-21	SWITCH, LEAF (REC A)
S85	1-571-281-21	SWITCH, LEAF (REC B)
S86	1-571-281-21	SWITCH, LEAF (HALF)

MISCELLANEOUS

7	1-590-826-11	WIRE, FLAT TYPE (27 CORE)
8	1-575-663-11	WIRE, FLAT TYPE (5 CORE)
10	\triangle 1-551-188-XX	CORD, POWER (E)
10	\triangle 1-551-506-XX	CORD, POWER (US, Canadian)
10	\triangle 1-555-795-00	CORD, POWER, EULO PLUG (AEP, G)
10	\triangle 1-556-035-00	CORD, POWER (UK)
11	\triangle 1-569-007-11	ADAPTOR, CONVERSION 2P (E)
12	1-575-218-11	WIRE, FLAT TYPE (17 CORE)
54	1-548-596-41	COUNTER, TAPE (MIDDLE TYPE)
71	*	1-575-850-11 WIRE, FLAT TYPE (9 CORE)
F701	\triangle 1-532-285-00	FUSE, TIME-LAG 1.25A (AEP, UK, G, E)
F701	\triangle 1-532-741-11	FUSE, GLASS TUBE 1.6A (US, Canadian)
F702	\triangle 1-532-285-00	FUSE, TIME-LAG 1.25A (AEP, UK, G, E)
F702	\triangle 1-532-741-11	FUSE, GLASS TUBE 1.6A (US, Canadian)
HRPE101	A-2003-838-A	BASE ASSY, HEAD (REC/PB/ERASE)
M1	X-3359-417-1	MOTOR (CAPSTAN) ASSY
M2	A-2003-474-A	MOTOR (REEL) ASSY
T701	\triangle 1-449-420-21	TRANSFORMER, POWER (US, Canadian)
T701	\triangle 1-449-666-21	TRANSFORMER, POWER (E)
T701	\triangle 1-450-465-11	TRANSFORMER, POWER (AEP, UK, G)
VS901	\triangle 1-570-307-11	SWITCH, VOLTAGE CHANGE (VOLTAGE) (E)

ACCESSORY & PACKING MATERIAL

1-559-533-11	CORD, CONNECTION
* 3-354-918-81	INDIVIDUAL CARTON
* 3-359-942-01	CUSHION
3-703-450-01	INSTRUCTION (US)
3-753-200-11	MANUAL, INSTRUCTION (AEP, Canadian, UK, E) (ENGLISH, FRENCH, SPANISH, PORTUGUESE)
3-753-200-41	MANUAL, INSTRUCTION (AEP) (GERMAN, DUTCH, SWEDISH, ITALIAN)
3-753-200-51	MANUAL, INSTRUCTION (G) (GERMAN)

Ref. No.	Part No.	Description	Remark
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HARDWARE LIST

# 1	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S (E)	
# 2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
# 3	7-682-547-04	SCREW +BVTT 3X6 (S)	
# 4	7-682-548-09	SCREW +BVTT 3X8 (S)	
# 5	7-621-773-95	SCREW +BVTT 2.6X6 (S)	
# 6	7-621-773-93	SCREW (PANEL 2.6 TP2)	
# 7	7-621-775-00	SCREW +B 2.6X3	
# 8	7-627-556-08	SCREW +P 2.6X2.8	

SONY® SERVICE MANUAL

*US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model*

SUPPLEMENT-1

File this supplement with the service manual.

The Australian Model is added to the Service Manual released previously.
Please utilize it since its contents are same as those of UK Model.

TC-WR670

SONY® SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

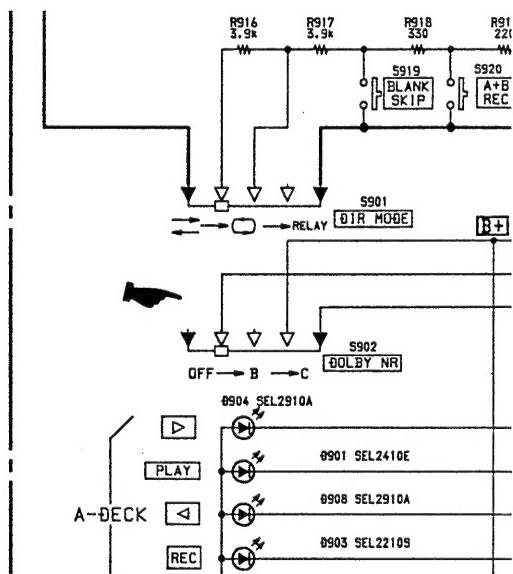
SUPPLEMENT-2

File this Supplement with the Service Manual.

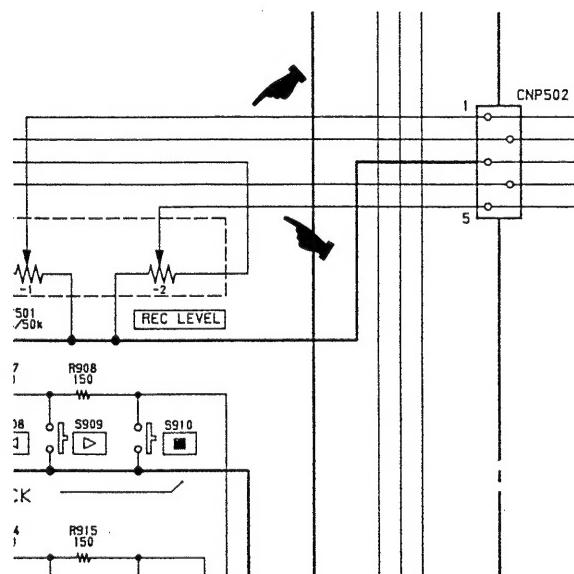
█ : Corrected portion

• SECTION 5 DIAGRAMS

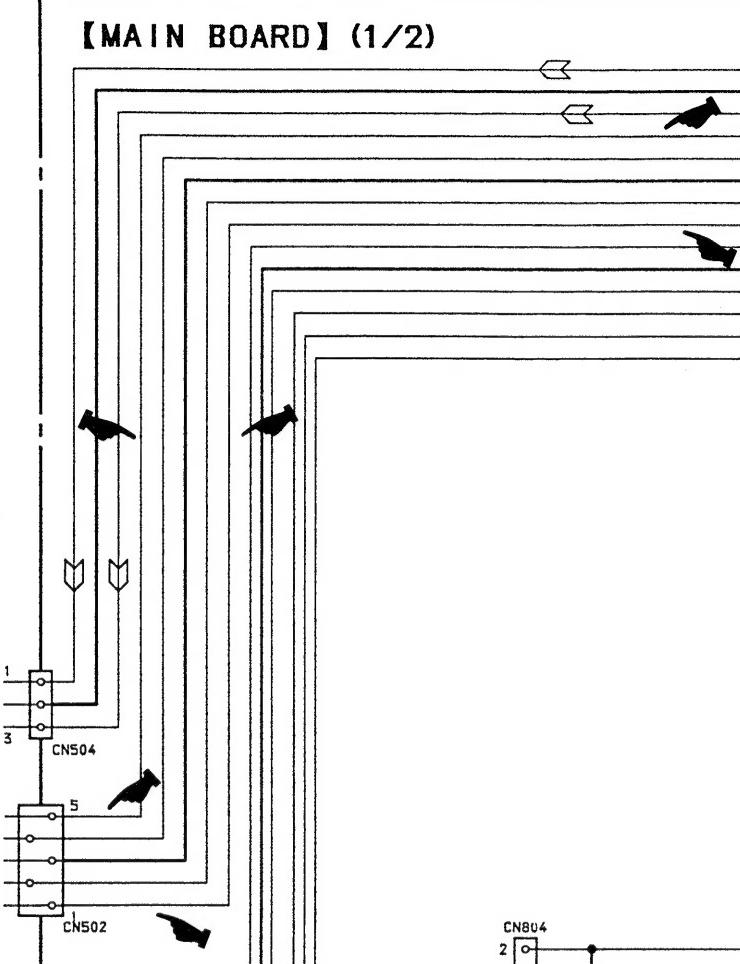
- Service Manual Page 17.
(Location J – M, 1 – 3)



- Service Manual Page 18.
(Location F – I, 4 – 7)



- Service Manual Page 18 – 19.
(Location A – F, 8 – 12)



1. BLOCK DIAGRAMS

$-\text{L}-\text{CH}-$

